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PIT AND QUARRY

OCTOBER 1948

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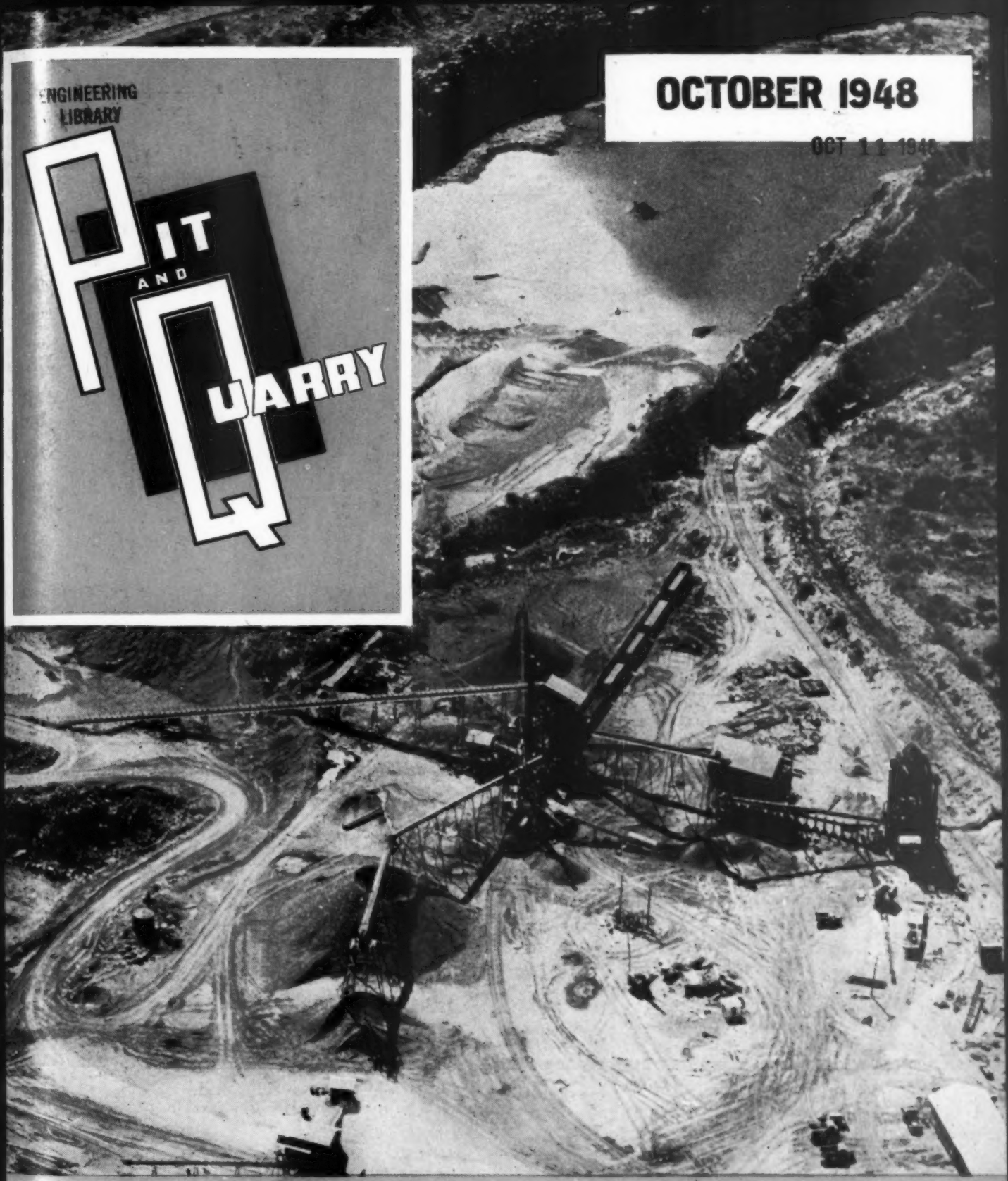
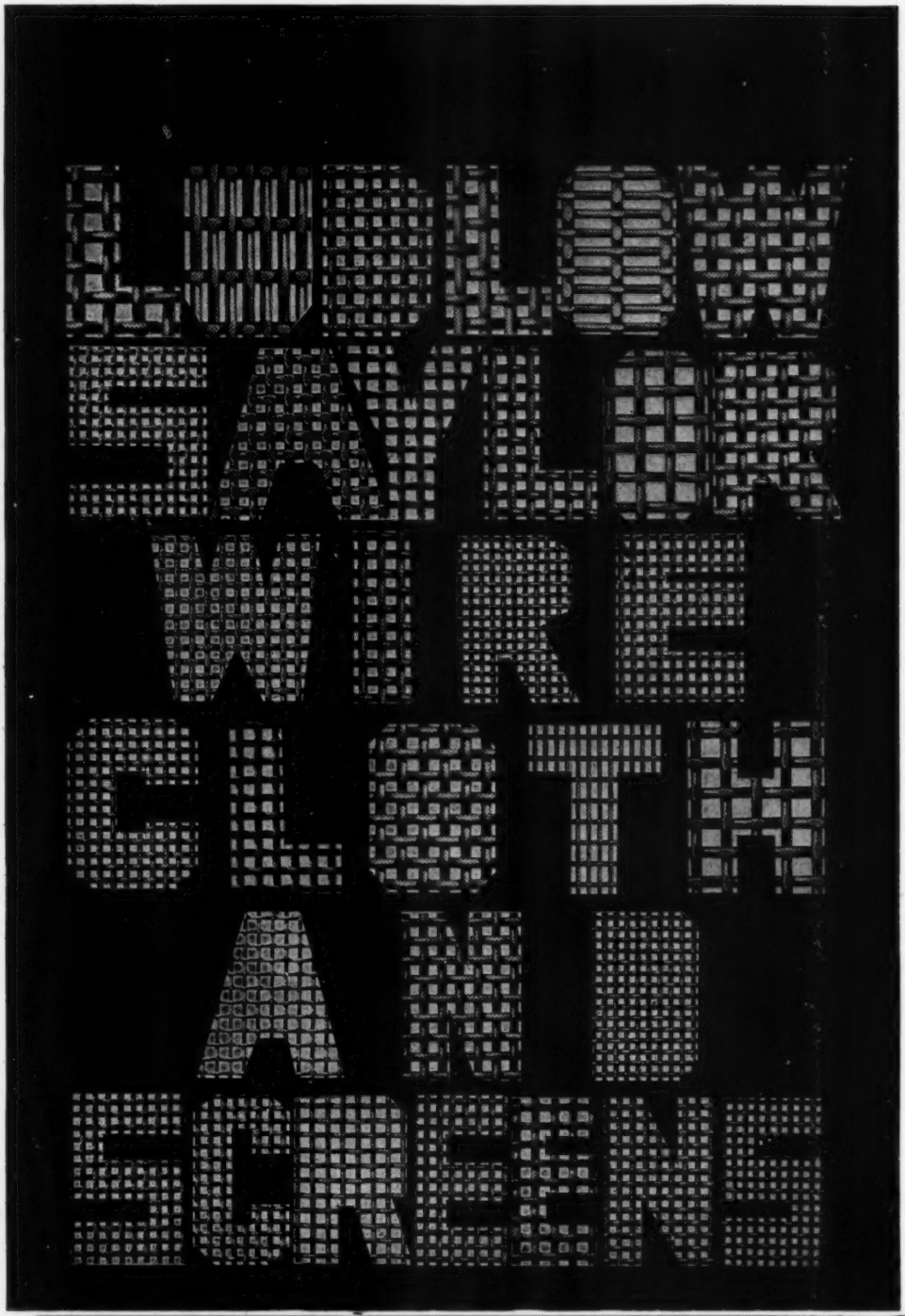


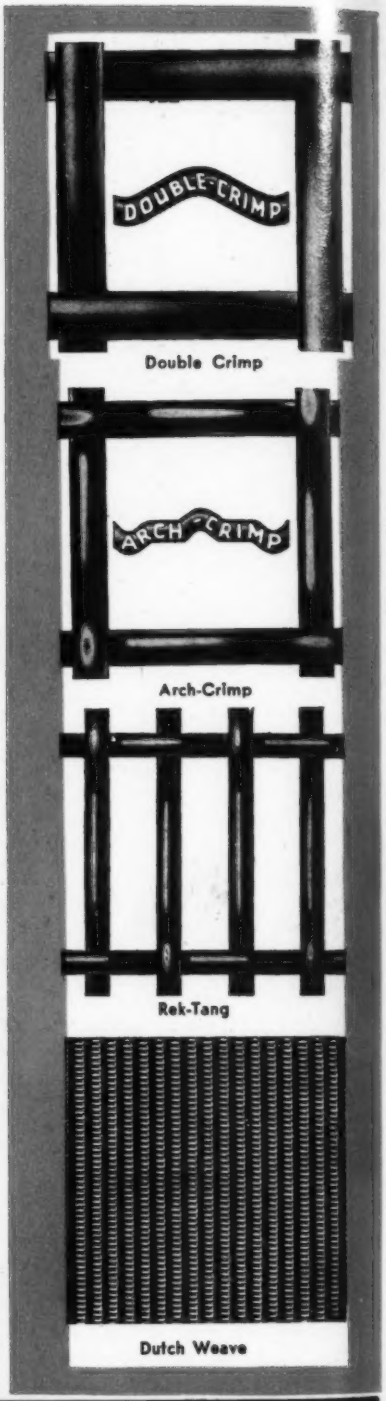
Aerial View of the Uvalde Rock Asphalt Company's plant, Blewett, Tex.

In this issue

Story of the National Concrete Masonry Assn. • Going Underground for Silica Sand • Lubrication of Mining Machinery • Western Gypsum Builds Plant in Record Time

Table of Contents, Page 56





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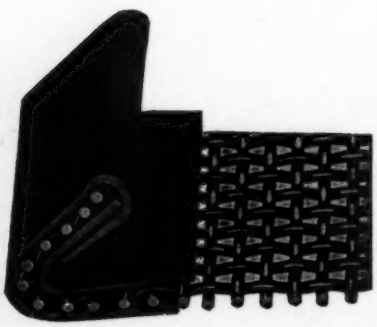

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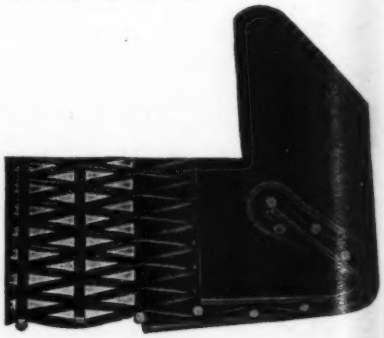
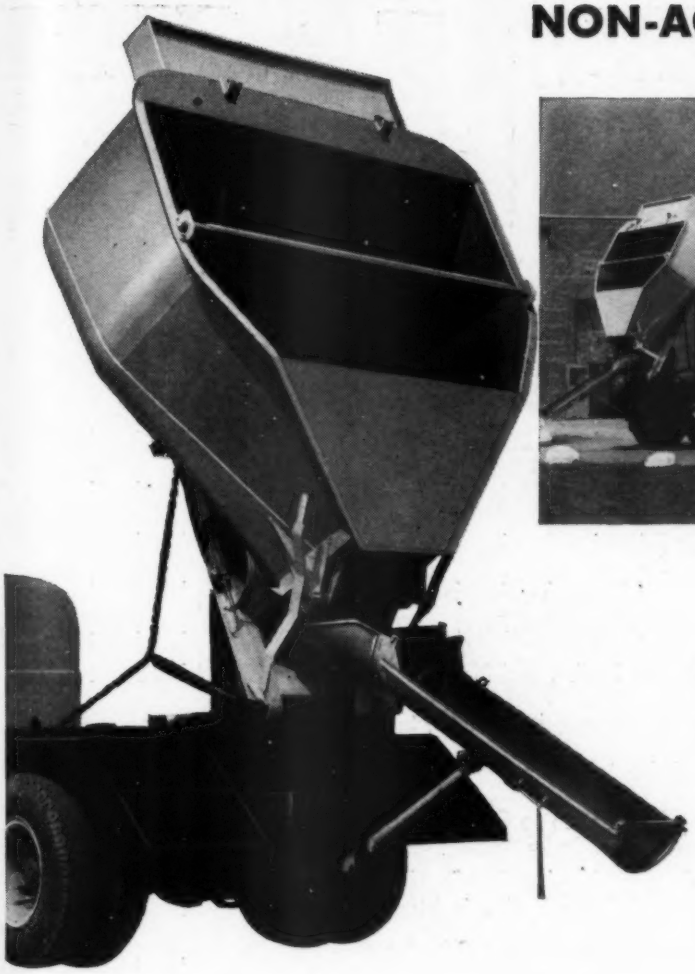
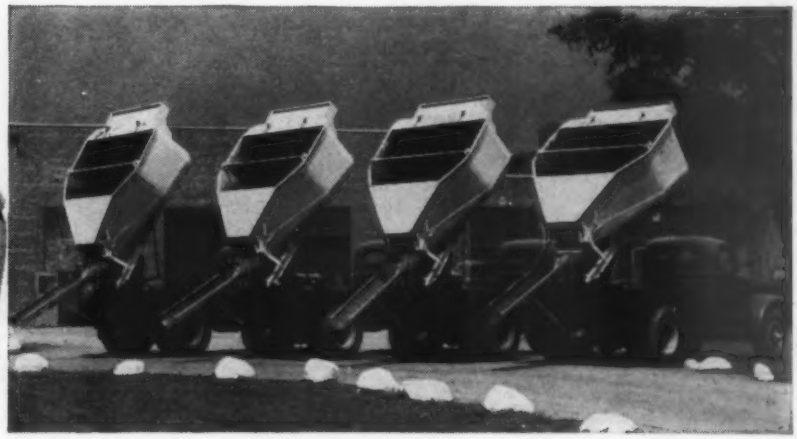


The Trend IS TO AIR-ENTRAINED CONCRETE... HAULED and PLACED with HERCULES NON-AGITATING EQUIPMENT





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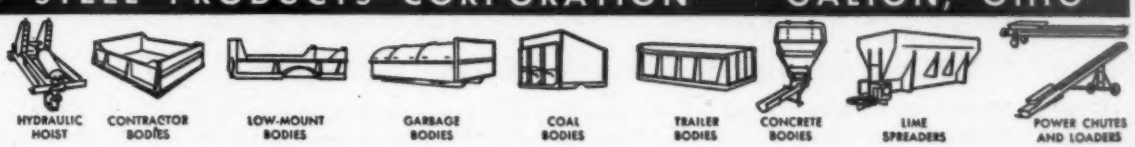

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Vol. 42 OCTOBER 1948 No. 4

PIT AND QUARRY

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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

In this issue

Editorial 58
News of the Industry 61
Thirty Years Ago 69
Washington News Letter 70
Going Underground for Silica Sand 71
Carney Co. Expands Rock Wool Plant at Mankato for Third Time . 73
Lubrication of Underground Mining Machinery — II 76
Speed Pays Off for Western Gypsum Co. 80
Ex-GI Puts Army Experience to Good Use in Sand-Gravel Business . 85
Screenings 87
Lime Production and Consumption in Mexico 89
40-Year-Old Transport Becomes Self-Unloading Freighter . . . 93
Dirt-Free Diesel Operation in Nonmetallic Mining Industries . . 95
Modernized Gravel Dredge Boosts Warner's Output 98
The Plant Operator 101

The Concrete Manufacturer

News of the Industry 131
The Movies Sell My Concrete 133
The Story of the National Concrete Masonry Association . . . 134
Concrete Filler Block 142
Designed for Better Concrete Brick 144
Power Fork Truck Solves Problem for Canadian Pipe Manufacturer . 146
Black-Brollier Opens New Building 147
Southern California Concrete Masonry Men Meet 148

Personal Mention 106
New Machinery 109
Trade Notes 118
Legal Decisions 120
Traffic News 125
Index to Advertisers 194

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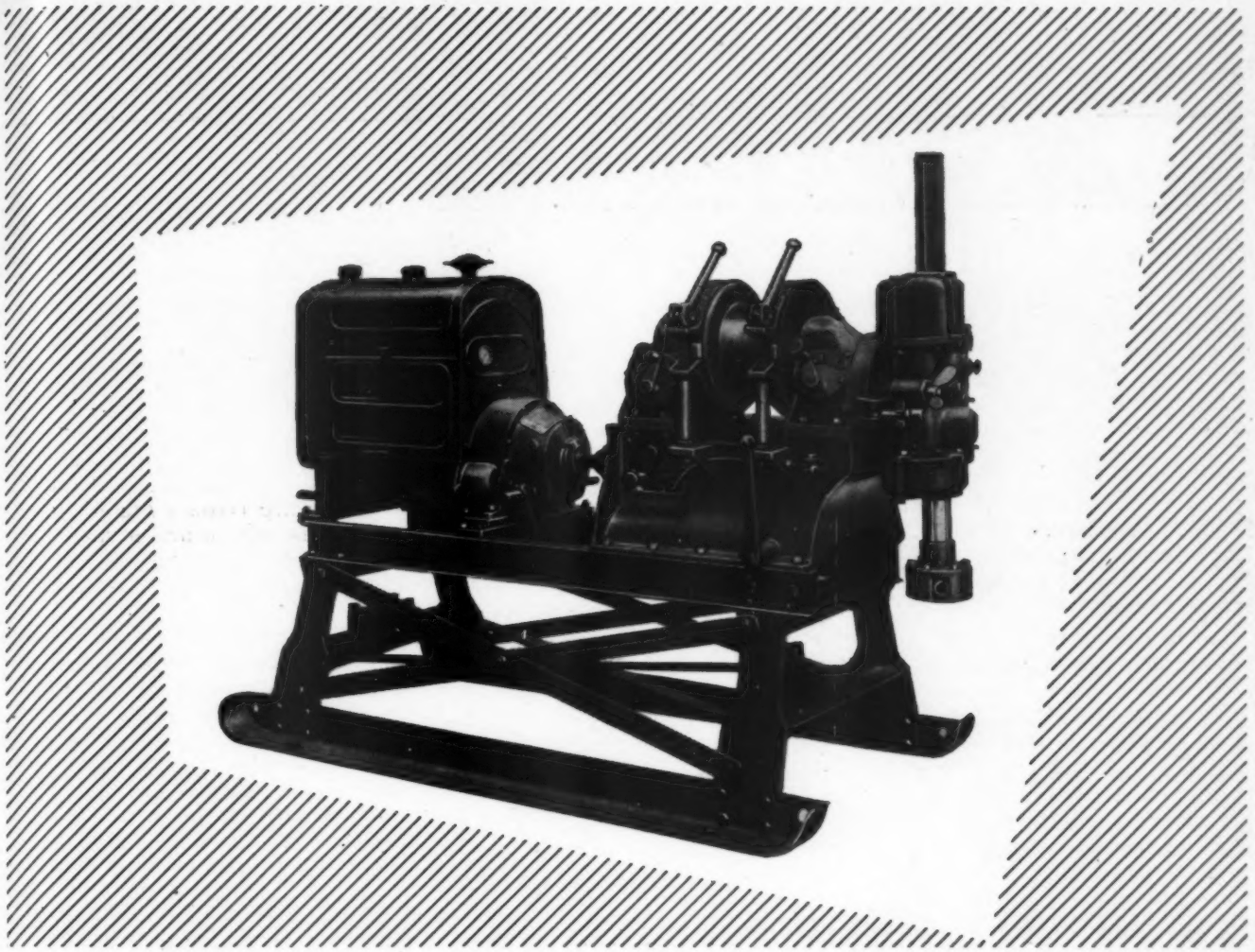

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editorial

Human Relations and the Atom

IN ALL recorded history there has been no scientific achievement of man which has had greater potentialities for good or evil than the release of the energy within the atom. What is done with this new power is of tremendous importance to each one of us and to the future of mankind. In this issue we present, instead of the customary editorials on timely subjects of direct interest to nonmetallic minerals producers, excerpts from a recent address, "Human Relations and the Atom," by David E. Lilienthal, chairman of the U. S. Atomic Energy Commission. This address was made at the recent opening of the Atomic Energy Exhibit at the Golden Jubilee Exposition, New York City.

"It is a privilege, a happy privilege, to participate in the opening of this Jubilee of the formation of Greater New York.

"It is not our riches we most celebrate, nor our great scientific and technical advances, nor even advances in medicine or industry or military progress or artistic and literary excellence. No, we reserve the demonstration of our highest respect and most intense feeling of pride in quite another kind of progress—in those events that carry us along the road we believe most important of all—the art of getting along together.

"We see that learning how to make scientific advance serve mankind, how to make it part of the stream of man's everyday living, is more difficult, more subtle and more important than the solution of technical riddles. . . . We see in the United Nations a great effort to develop further those very skills of living together in peace and justice, and in generousness of spirit, that we in this country have carried forward among ourselves with such heartening success. The day of science and technology in which we live increases rather than diminishes the importance of these social inventions.

"The most noteworthy recent achievement of science and industry—the release of the energy within the atom—is an illustration on a grand and dramatic scale of this very proposition.

"This discovery had behind it more than 30 years of the work of many minds in many lands throughout the world. The development of the atomic bomb itself was the result of the working together of men of science and technology in Great Britain, Canada, the United States. The even more difficult and more important task of living with the atom, the problem of effective international control, is also one that has seen the pooling of the minds and purposes and efforts of men in many countries. It is an effort thus far not crowned with success it is true—far from it—but one that will and can be solved only by the principles of human cooperation.

"Beginning in 1940, before Pearl Harbor, scientific knowledge, useful in war, was pooled between the United States and Great Britain. It was under that general policy that research on the atomic bomb began. . .

"When the atomic bomb burst upon the world in August 1945, the three governments recognized that this new and devastating force placed upon them and the rest of the world a grave responsibility. This feeling was expressed by the three governments in the Truman-Attlee-King Declaration of November 15, 1945. That Declaration stated that the application of recent scientific discoveries requires that the entire civilized world devise means to insure that atomic energy shall be used for the benefit of mankind instead of a means of destruction. . .

"With the establishment of the United Nations Atomic Energy Commission in 1946 and the submission of the Baruch proposals for the United States for a just internationalization of atomic energy, the activities of these three nations, along with those of many other peace-loving nations, have been directed toward the solution of this urgent problem. . .

"The wartime experience shared by the three governments provides a convincing demonstration of the mutual benefits to be derived from cooperative effort. Recognizing this, the three governments concerned are continuing to utilize, in an expanded way, the cooperative principle in certain limited areas in which work has been proceeding separately along the same lines in two or more of the three countries. . .

"Two years ago, in his history-making address to the United Nations Commission on Atomic Energy, Mr. Bernard Baruch laid before the peoples of the world the American proposal for international development and control of this newly discovered knowledge. That proposal would have extended on a world-wide scale the cooperative principle so central to American life, the principle of cooperation among all men and among all nations, applied to the development of atomic energy for all of its vast benefits to mankind. By the same measures of cooperation that proposal would have extended to all mankind safeguards against the misuse of atomic energy for destruction and coercion. . .

"The United States has made an offer to the world for international control that stands as a significant event in man's moral history. On the basis of that proposal many nations have worked out an effective plan of control which is now the plan of a large segment of the world's peoples. But, for the time being, international control is blocked. In the absence of such agreement, the United States is pressing forward with its own program of research and development in every aspect of atomic energy, a program of the greatest magnitude and intensity. This undertaking is yielding, even at this early date, knowledge basic to human life, knowledge strikingly new and far-reaching in its future consequences. . .

"We are going ahead on the only path presently open to us, that is, increasing our own pre-eminence in all aspects of atomic energy, going at this hard, with everything we've got.

"We have left the door open to international agreement and that kind of openness and world-wide cooperation among peoples in which we deeply believe, and to which our history and our vision commit us."

Walter E. Trauffer

news of the industry

PIT AND QUARRY

N.A.L.A. Program for 1949 May Be Started Now If '48 Program Is Finished

Robert M. Koch, secretary of the National Agricultural Limestone Association, Inc., has announced that a final decision was reached concerning the launching of the 1949 agricultural conservation program.

It was decided to allow any state which so desires to begin the 1949 program as early as September 1. Orders for materials may be taken and placed for delivery at any time, but only on farms which have completed their 1948 programs. This does not affect the closing date for the 1948 program, which runs through to December 31, 1948. States wishing to begin their 1949 program before January 1 will therefore have two programs running concurrently, but not on the same farms.

Marquette Celebrates Golden Anniversary of Its Founding

The fiftieth anniversary of the founding of Marquette Cement Manufacturing Company was marked by a series of birthday parties attended by all Marquette employees, their families and invited guests in all communities in which the company's principal plants and offices are located. Featuring fireworks, vaudeville acts, valuable prizes, band music and refreshments, the first company-sponsored plant town celebration was held at the LaSalle-Peru (Ill.) high school athletic field on August 21. Other celebrations followed in this order: Cape Girardeau, August 28; Des Moines, September 11; Nashville, September 18; and Cowan, September 25.

A special feature of the fireworks at each party was a mammoth birthday cake executed in outlines of colored fire and a reproduction of Marquette's fiftieth anniversary symbol.

Top officials from Marquette's Chicago headquarters were present at each of these celebrations, but only as celebrants. There were no speeches other than at LaSalle, Ill., where Marquette's vice-president in charge of operations, R. Moyle Sr., spoke briefly.

Lehigh Portland Cement has filed plans with the city of Buffalo, N. Y., to erect storage facilities at 1751 Fuhrmann Blvd.

Permanente Cement Co. Announces Plan to Buy Plant Site in Montana

Possible expansion of Permanente Cement Company's facilities to meet the growing needs of the West was indicated when the company disclosed that it has exercised an option to purchase 498 acres of land near Helena, Mont., as the site of a cement plant.

Pointing out that all of the West's cement producers are operating at capacity and that demand is far in excess of supply, company officials said they are giving the Montana location serious consideration as the site of a new cement manufacturing plant. Permanente has had the property under option for six months.

The transaction involves three parcels owned by John S. F. Donovan, Robert A. Donovan and Augusta Lamb Donovan of San Francisco; Hallie C. Devore of Helena; and Michael J. Sullivan of Alhambra, Mont.

Permanente already owns and operates producting plants at Permanente, Calif., and Seattle, Wash., and has distribution facilities at Honolulu and Redwood City, Calif.

Coming Events

October 12-16, 1948 — Chicago. Fifth National Chemical Exposition and National Industrial Chemical Conference, Coliseum and Coliseum Annex.

October 14-16 — St. Louis. Regional meeting of Industrial Minerals Division, American Institute of Mining and Metallurgical Engineers, Sheraton-Coronado Hotel.

October 18-22, 1948—Chicago. Thirty-sixth National Safety Congress and Exposition, Stevens Hotel.

October 20-22, 1948—White Sulphur Springs, W. Va. Fall meeting, National Industrial Sand Association, The Greenbrier.

November 4-6, 1948 — Chicago. Meeting of Operating Division, National Lime Association, Palmer House.

January 10-14, 1949—Philadelphia. Third National Materials Handling Exposition, Convention Hall.

January 18-20, 1949—Washington. Annual meeting, National Agricultural Limestone Association Inc., Hotel Statler.

January 31-February 3, 1949—Cleveland. Annual convention and exposition, National Concrete Masonry Association, Cleveland Auditorium.

February 7-9, 1949 — New York. Annual convention, National Crushed Stone Association, Hotel New Yorker.

February 13-17, 1949—San Francisco. Annual meeting of American Institute of Mining and Metallurgical Engineers.

February 14-18, 1949—New York. 19th annual convention, National Ready Mixed Concrete Association, Hotel New Yorker.

February 14-18, 1949—New York. Thirty-third annual convention, National Sand and Gravel Association, Hotel New Yorker.

February 21-22, 1949—Chicago. Annual convention, Agricultural Limestone Institute, Edgewater Beach Hotel.

February 27, 1949—New York. 30th annual convention, The Associated General Contractors of America, Waldorf-Astoria Hotel.

Kaiser Named to Post As Assistant Director Of P.C.A. Promotion Work

W. G. Kaiser, manager of the Portland Cement Association's farm bureau, has been appointed assistant director of promotion, according to an announcement

W. G. Kaiser

by Frank T. Sheets, association president. T. E. Long, assistant manager of the farm bureau, succeeds Mr. Kaiser as manager. Both promotions became effective August 1.

In his new capacity Mr. Kaiser will work with W. D. M. Allan, director of promotion, giving special attention to the association's advertising, public relations and literature production activities.

Mr. Kaiser is nationally known as a leader in agricultural engineering. In 1946 he was awarded the Cyrus Hall McCormick medal for the American Society of Agricultural Engineers for meritorious engineering in agriculture. He holds a bachelor's and a professional degree in agricultural engineering from Iowa State College, and is a member and past president of the A.S.A.E. and a member of the American Concrete Institute. He has been in charge of Portland Cement Association farm promotion since 1917.

Mr. Long is a member of the A.S.A.E. and a graduate agricultural engineer from the University of Nebraska. He served on the staff of the North Dakota Agricultural College from 1939 to 1944, when he joined the agricultural engineering department of the Republic Steel Corporation.

New Book on Mining Industry Contains Valuable Material

From the Ground Up, a new book by Paul Tyler, sets forth the activities, problems and scope of the United States mining industry. In simple language it outlines the occurrence and extensive use of our mineral wealth. The book also reviews the status of the United States with respect to mineral and fuel reserves and suggests national policies which the author believes will aid in maintaining a healthy domestic mining industry. The volume has been endorsed by the American Mining Congress.

We list a few of the section topics discussed which are germane to the nonmetallic industries: What Depletion Means; Tariff Duties on Raw Materials; Are We to Become a "Have-Not" Nation?; Factors Influencing Future Trends; National Policies Dealing with Minerals; Safeguarding Our Mineral Supply.

Mr. Tyler is a consulting mineral technologist with the Bureau of Mineral Research at Rutgers University.

Levison Named Director of Construction Industries Assn.

At the last annual meeting of members of the Construction Industries Association, Inc., held in Chicago, Arthur A. Levison, vice-president in charge of the Construction Equipment Department, Blaw-Knox Division, Blaw-Knox Company, was elected a director for a three-year term.

The Construction Industries Association is affiliated with the American Road Builders' Association and constitutes the Manufacturers' Division of A.R.B.A. It promotes and protects the best interests

Arthur A. Levison

of its members and the public in connection with highway construction and exhibitions at which the products of its members are exhibited.

Mr. Levison was also recently elected to membership of the Executive Board of the Committee on Concrete and Concrete Aggregates of the American Society for Testing Materials.

Because the first National Catholic Building Convention and Exposition, held in Chicago last summer, was outstandingly successful, it has been announced that it will be held again in that city next year.

Upham of A.R.B. Believes Spending for Road Building Will Break Records in 1948

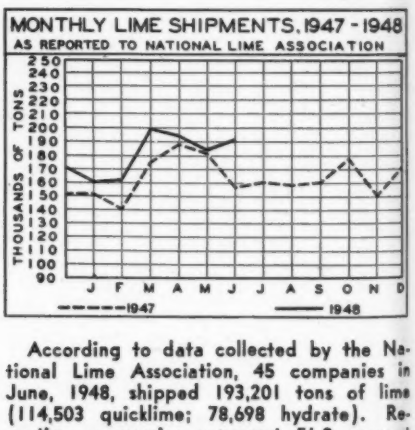
Charles M. Upham, engineer-director of the American Road Builders' Association, recently predicted in a conference with road officials that America's highway construction program would reach an all-time high in 1948. He based this belief on the uniform increases since 1945. "If the upward trend is maintained," he declared, "we should hit the $1,750,000,000 mark this year."

"October is our peak construction month," he continued. "In October, 1946, $100,000,000 was spent in road building. In October, 1947, this rose to $178,000,000. At this rate, October, 1948, should show a total expenditure of $250,000,000. The yearly ratios show practically the same increases—from $772,000,000 in 1946 to $1,500,000,000 in 1947. . . ."

Citing figures from the U. S. Department of Commerce, Mr. Upham pointed out that construction in all categories, public and private, was expected to reach a record figure of $18,000,000,000 in 1948. This figure will be $4,000,000,000 higher than the record established in 1947, and $4,500,000,000 over the previous high reached in 1942, he announced.

Total construction expenditures for the first seven months of 1948, according to the same source, amounted to $9,400,000,000 which was 36 percent higher than the corresponding period of 1917. Residential construction continued to lead other forms.

"Increases in public construction spending is principally due to gains in highway building," declared Mr. Upham in conclusion.



According to data collected by the National Lime Association, 45 companies in June, 1948, shipped 193,201 tons of lime (114,503 quicklime; 78,698 hydrate). Reporting companies represent 51.2 percent of the association members' total capacity of record. Based on Pit and Quarry's estimates for the remainder of the industry, the total shipments for the month by all plants were approximately 415,000 tons. Shipments by uses and grades for June, 1948, were:

	Quicklime (tons)	Hydrate (tons)
Agricultural	484	13,715
Building	14,299	41,403
Chemical	99,720	23,580
Totals	114,503	78,698

New Records Established In Cement Firms' Reports On Sales and Net Profits

Several of the country's leading cement companies have issued reports of 1947-48 production and profits which indicate that the cement industry has assumed a place of major importance in the nation's economy.

The Lehigh Portland Cement Company reported earnings of $3,689,309 for the year ending March 30, 1948, a figure which was surpassed when the June 30 (12-month) total showed $4,347,902. Shipments during the early part of the year ran between 12 and 15 percent ahead of the corresponding months of 1947.

Among other high annual figures was $2,270,000, a high in Permanente Cement Company history. Pacific Portland Cement quoted a 12-month net profit of $1,217,296, also the highest score in the firm's experience. For the year ending June 30, Alpha Portland Cement Company's net income was $2,050,645.

Sales for the Calaveras Cement Company during the same six-month period reached $2,064,443.

Lone Star net profits jumped to $2,037,785 for the three-month period ending June 30; a year ago the comparable period showed profits of $1,491,392.

Quarterly reports also included figures on the Pennsylvania-Dixie Cement Company's earnings, which reached $771,271 for the second quarter of 1948.

A.L.I. Reports Increase In Use of Liming Materials

According to word received from the Agricultural Limestone Institute, all records were broken in 1947 for the volume of liming materials consumed on farms. The total count for the year was 30,282,902 tons, 820,000 tons more than in 1946.

Tabulations of liming activity by states reveals the following interesting facts: that in 25 states listed the amount of liming material used in 1947 was less than the amount used in 1946; that in 12 states the amount of liming material used in 1947 was more than in 1946; that a decrease of 305,544 tons, or 10 percent, occurred in the Northeast, while the other region showed an increase; that of the total increase of 820,000 tons, 541,709 tons were agricultural limestone.

Rhodes & Robinson Quarries Lease Old Fetherston Plant

Rhodes & Robinson Quarries, Inc., of Palo Alto, Calif., has announced that it has a 10-year lease on the Fetherston quarry at Felton, Calif.

These facilities were operated for many years by the late George A. Fetherston. Shortly before Mr. Fetherston's death a large sum was spent to replace equipment and machinery destroyed by fire. Under new management the quarry will install $50,000 worth of machinery, according to John V. Lloyd, an official of Rhodes & Robinson.

With the expanded program under way spokesmen for the Palo Alto firm stated that daily production is expected to be about 1,000 tons. Plans envision the erection of a new office building at the quarry site. Joe Hampton of Palo Alto is superintendent.

Auburn Lime Products Company Installs Second Rotary Kiln

The Auburn Lime Products Company recently announced the installation of a second 4- by 60-ft. rotary kiln at the firm's plant in El Dorado County of California. The addition of this kiln doubles the plant's capacity.

Installation of this unit completes the original setup and gives the plant a monthly production of about 1,700 tons of lime.

New England States to Hold Materials Handling Show

Dates for the New England Materials Handling Exposition have been set for October 5 to 7 at Mechanics Building in Boston. It is the first regional materials-handling event of its kind ever scheduled.

Heading the show is R. Kennedy Hanson, manager, who is secretary-treasurer of the National Materials Handling Institute.

The firm of Whittier & Gooden recently installed a $30,000 washer at their pit near Dixboro, Mich., which will wash sand and gravel at the rate of 100 cu. yds. per hour. Spring water, flowing at the rate of 800 g.p.m. washes the material, is purified and then returns to repeat the laundering job.

Tentative Program Posted For Operating Division Of National Lime Assn.

The following tentative program has been announced for the meeting of the National Lime Association's Operating Division, to be held November 4 to 6 at the Palmer House in Chicago:

Thursday, November 4.

10 a. m. Address: *How Do You Handle Materials?* by Lea P. Warner, engineer, The Warner Company.

1:30 p. m. Operating meeting suggestions and future plans.

1:45 p. m. Coal session—Address: *How to Get the Most Out of Coal* by Dr. Houston St. Clair, combustion engineer, Jewell Ridge and Virginia Smokeless Coal Co.

Friday, November 5.

8:30 a. m. Plant inspection at Marblehead Lime Company's South Chicago plant.

12 m. Group luncheon at Phil Smidt's restaurant.

2 p. m. Lime plant problem questionnaire session, led by Win J. Ash, plant manager, New England Lime Company, Canaan, Conn.

Saturday, November 6.

9:30 a. m. Address: *Packaging Can Be Made Easier,* by F. C. Mallery, superintendent, National Gypsum Co., Luckey, Ohio.

A blaze which was fed by accumulations of oil swept through one building of the Grand Rapids Gravel Company's plant at Grand Rapids, Mich., causing damage estimated at $50,000. Machinery, conveyor belts, diesel power and crushing equipment were heavily damaged. The plant structure will have to be rebuilt. Firemen were able to save two other buildings.

• E. W. Stephens, a leading designer of conveying systems and manager of belting sales for Goodyear Tire & Rubber Co., Akron, O., uses a relief map made to exact scale in laying out in miniature a proposed cross-country belt conveyor system. He will display the layout in the prospective customer's office as a graphic visual aid to his cost and performance statistics. Mr. Stephens engineered the world's longest belt-run, the 10-miler at Shasta Dam; the highest lift belt (729 feet) for an Alabama coal mine, and is currently supervising installation of a 7-mile belt haul at Bull Shoals Dam in Arkansas.

F.W.A. Releases Figures For Federal Aid to States In 1950-51 Road Programs

Sums apportioned to the states from the $450,000,000 fund authorized by the Federal-Aid Highway Act of 1948 for the fiscal year 1950, for improvements on Federal-aid primary, secondary and urban routes were announced by Major General Philip B. Fleming, Federal Works Administrator.

The Act, approved recently by the President, authorizes an appropriation of $450,000,000 for each of the fiscal years 1950 and 1951 to assist the states in continuing the post-war highway program for which initial appropriations were made under authorization of the Federal-Aid Highway Act of 1944. Nearly all funds authorized by the 1944 Act have been exhausted by project commitments.

Under provisions of the 1948 Act, as in the previous Act, 45 percent of the total authorization may be expended for projects on primary roads in the federal-aid system; 30 percent for the improvement of routes in the federal-aid secondary system, and 25 percent for work on federal-aid highways in urban areas having a population of 5,000 or more. The states generally are required to match federal expenditures.

The funds are to be administered by the Public Roads Administration of the Federal Works Agency in cooperation with state highway departments, according to the usual federal-aid procedure. The apportionment for the fiscal year 1950 will be available next July 1 and will remain available to the states until June 30, 1952.

Amounts apportioned to the states, the District of Columbia, Hawaii and Puerto Rico are seen in the table below.

During the so-called "miners' holiday" and the resultant slow-down of river traffic on the upper Ohio River, the Keystone Sand Division of Dravo Corporation took several parties of industrial experts and executives on a short river excursion—some 30 miles. The motor vessel *Victory*, newest of the Keystone sand and gravel towboats, was used.

State	Sums Apportioned for Fiscal Year 1950			
	Federal-Aid Primary System	Secondary or Feeder Roads	Urban Highways	Total
Alabama	$4,234,466	$3,347,912	$1,157,921	$8,740,299
Arizona	2,883,981	1,994,406	232,926	5,111,313
Arkansas	3,437,818	2,765,905	495,958	6,699,681
California	8,025,813	4,595,138	7,216,292	19,837,243
Colorado	3,583,930	2,411,757	829,510	6,825,197
Connecticut	1,240,162	681,025	2,316,659	4,237,846
Delaware	974,531	649,688	181,297	1,805,516
Florida	2,894,455	1,938,785	1,421,220	6,254,460
Georgia	5,026,124	3,834,698	1,441,091	10,301,913
Idaho	2,478,367	1,733,203	188,176	4,399,746
Illinois	7,812,450	4,198,769	8,449,887	20,461,106
Indiana	4,762,317	3,193,419	2,723,787	10,679,523
Iowa	4,916,913	3,516,275	1,414,525	9,847,713
Kansas	4,973,808	3,493,343	983,721	9,450,872
Kentucky	3,765,200	3,045,891	1,154,581	7,965,672
Louisiana	3,036,036	2,270,096	1,360,748	6,666,880
Maine	1,721,234	1,240,539	498,017	3,459,790
Maryland	1,632,747	1,043,969	1,590,418	4,267,134
Massachusetts	2,614,477	698,824	5,875,054	9,188,355
Michigan	6,058,649	3,663,939	5,048,623	14,771,211
Minnesota	5,356,784	3,690,493	1,960,081	11,007,358
Mississippi	3,649,214	3,001,136	533,179	7,183,529
Missouri	5,909,105	4,048,164	2,799,683	12,756,952
Montana	4,048,884	2,766,121	273,348	7,088,353
Nebraska	3,954,543	2,791,999	695,466	7,442,008
Nevada	2,564,998	1,718,707	53,853	4,337,558
New Hampshire	974,531	649,688	422,019	2,046,238
New Jersey	2,547,207	927,053	4,911,404	8,385,664
New Mexico	3,234,379	2,238,846	228,567	5,701,792
New York	9,615,348	3,788,591	16,681,818	30,085,757
North Carolina	4,867,144	3,983,477	1,326,007	10,176,628
North Dakota	2,951,523	2,127,843	190,644	5,270,010
Ohio	6,967,252	4,101,078	6,698,622	17,766,952
Oklahoma	4,484,445	3,294,834	1,197,791	8,977,070
Oregon	3,330,486	2,272,391	720,430	6,323,307
Pennsylvania	8,156,836	4,679,791	9,344,128	22,180,755
Rhode Island	974,531	649,688	997,786	2,622,005
South Carolina	2,724,022	2,246,419	581,082	5,551,523
South Dakota	3,114,552	2,217,687	197,342	5,529,581
Tennessee	4,266,287	3,278,719	1,415,352	8,960,358
Texas	12,679,694	8,930,900	3,966,153	25,576,747
Utah	2,259,221	1,504,566	385,353	4,149,140
Vermont	974,531	649,688	188,251	1,812,470
Virginia	3,657,445	2,836,866	1,324,938	7,819,249
Washington	3,145,271	2,129,619	1,303,754	6,578,644
West Virginia	2,211,489	1,857,176	717,603	4,786,268
Wisconsin	4,802,731	3,253,279	2,358,393	10,414,403
Wyoming	2,474,161	1,679,067	118,209	4,271,437
Hawaii	974,531	649,688	349,535	1,973,754
District of Columbia	974,531	649,688	1,018,601	2,642,820
Puerto Rico	987,096	1,006,657	741,447	2,735,200

Soviet Leaders to Fight Waste and Incompetence In Cement Manufacturing

According to newspaper reports, the Bezhitsa Cement Works in Russia during the first six months of 1948 lost more than 1,300,000 rubles, the equivalent of $260,000. In this period production reached only 84.2 percent of the expected figure. A thorough examination of problems on the spot revealed many that are typical in plants of this type in Russia.

Obviously in cement plants one of the major operations is burning. This in turn is generally controlled by temperature gauges and instruments. Yet the Bezhitsa Cement Works does not have these instruments. Working in time-honored but outmoded fashion, the workmen control temperature by looking at the flame through blue glass. The eye, and not an exact machine, controls the supply of air or fuel. The results are obvious.

This type of work, examination showed, leads to low output, to breakdowns, and to poor quality of cement. Some of the furnaces fail to complete their planned output by one ton per hour, 24 tons per day. Hence, the annual loss is tremendous.

Some of the furnaces break down contantly. Thus No. 6 stopped for 2½ days on May 17 and again for two days on June 3. Altogether this one furnace wasn't working for five days in June. The fault lay partly in the lack of firebricks.

Another trouble at the plant is failure to manufacture or obtain spare parts in time. Recently a mechanic warned his chief that a crane gear was about to break down. No one paid any attention. The gear did break, and an electric motor was ruined. On the same day a transporter belt from the warehouse to the furnaces broke down.

Another grave source of loss is the poor method of fuel storage. The coal is dumped in any way possible and is often stolen. In three months of this year fuel worth more than $10,000 was wasted or lost.

Waste is general. A 220-kw. motor is used on the excavator when a 135 would suffice. Cement storage methods are so inadequate that wind and rain get at it easily and large clouds of cement blow about the Briansk province where the mill is located.

All of these facts were uncovered when an examination "brigade" of the newspaper *Komsomol Pravda* visited the works. The results of the investigation were published in this newspaper on July 23. At present a special government commission is taking measures to improve the situation and stop the waste.

National Gypsum Company's quarry at National City, Mich., has completed 10 years without a lost-time accident. Workers at the quarry have received certificates from the company in recognition of the record.

National Gypsum Acquires Rights to Extensive Tract In Nova Scotia Deposits

Adding to its reserves of raw materials for future development, the National Gypsum Company has acquired rights to 440 acres of gypsum deposits at Brierly's Brook in Antigonish County, Nova Scotia. Purchased through National Gypsum, Ltd., Canadian subsidiary, the property was taken under long-term leases from several private owners for an unannounced price.

The acquisition of the new deposits strengthens the Nova Scotia operation which National Gypsum has been developing since 1936. These include extensive quarry and harbor facilities at Dingwall and a fleet of freighters used to carry the Nova Scotia gypsum rock to the company's Eastern Seaboard plants. The new Brierly's Brook deposits are located conveniently near a deep-water, all-weather port.

J. Ahnfelt, Operating Manager For Universal, Dies at 76

John Ahnfelt, pioneer in the portland cement industry and for many years operating manager of the Universal Atlas Cement Company plants, died at the age of 76, on August 18 at his home in Chicago.

Coming to this country from Sweden as a boy, Mr. Ahnfelt became a leading figure in the development of true portland cement made from blast-furnace slag. He began work in 1895 as a tester in an experimental mill of the old Illinois Steel Company.

In 1918 he became operating manager for all the Universal Portland Cement plants in his office in Chicago. When the Atlas Portland Cement Company joined with Universal as a subsidiary of United States Steel Corporation, he retained his title until his retirement, October 31, 1937.

In addition to his long and successful career, he enjoyed three hobbies—golf, sailboat racing and his Florida grapefruit and orange groves.

Foamrock Corporation Building New Facilities at Houston, Tex.

Foamrock Corporation of Houston, Tex., headed by Alexander R. McVoy, president, is currently building a $125,000 plant in that city for the production of lightweight aggregate from native clay.

Construction began on a raw materials storage building in June, and production was scheduled to start before the end of the summer. The material for the product will be taken from a 6-ft. layer of gumbo clay at the 90-acre site. It will be scooped up with a dragline, stored and later fed to the kiln.

Initial outlay for the Foamrock facilities was said to be $125,000, but the eventual cost of the plant is expected to reach $200,000.

While undergoing processing, the clay will be heated to more than 2000 deg. F. and then "exploded" to introduce air bubbles. The fused and expanded clay will be ground to gravel size and used in concrete mixes.

Fene and Ankeny Appointed To Bureau of Mines Posts

The appointment of William J. Fene as assistant chief of the Health and Safety Division of the Bureau of Mines, and Marling J. Ankeny as chief of the Coal Mine Inspection Branch, was announced today by James Boyd, director of the Bureau.

Mr. Fene has been assistant chief of the Coal Mine Inspection Branch for the past three years, and Mr. Ankeny has been special assistant to the chief of the Health and Safety Division and the chief of the Coal Mine Inspection Branch. They succeed to positions formely held by John J. Forbes, who became chief of the Health and Safety Division upon the retirement recently of Daniel Harrington.

H. A. Huschke Announces Plans for 4th Annual A. L. I. Convention

Henry A. Huschke, managing director of the Agricultural Limestone Institute, has announced tentative plans for the program of the institute's fourth annual convention, which will be held February 21 and 22, 1949, in Chicago.

According to Mr. Huschke, three important phases of the agstone industry will be covered—production, marketing, and an interpretation of the labor, wage and tax laws affecting the producer. A half-day session will be devoted to problems concerning the operation of an agricultural limestone plant.

The Skansa Cement Company, Malmo, Sweden, reports that its mills in 1947 produced about 936,000 tons of cement, as against 864,500 tons the year before. Consumption of cement in Sweden was 35 percent higher than in 1939.

Pennsylvania Stone, Agstone Groups Hold Annual Outing

The annual outing of the Pennsylvania Stone Producers and the Agricultural Limestone Division was held at the Carlisle Country Club on August 26, 1948. There was no business meeting in connection with the outing this year.

The festivities started at 10:30 a. m. and continued until 10:30 p. m. The outstanding sports event was the golf match, with Mr. Fink, of the H. E. Millard Lime & Stone Co., Annville, Pa., taking first prize. The runner-up was Elgin Wood, Harrisburg, Pa. Two local bands furnished the music during the afternoon and early evening, and the day's activities were climaxed with a floor show.

Approximately 400 stone producers, highway officials and equipment manufacturers attended the outing.

• Stone Producers' quartet, under the direction of Oscar Benson: Fred Coleman, George E. Schaefer, C. T. Johnson, and Ken Scott, all of The General Crushed Stone Co., Easton, Pa.

• W. H. Simmons, Berks Products Corp.; A. L. Walborn, Windsor Service, Inc., Reading; W. H. Fehr, Berks Products Corp., Reading, Pa.; E. E. Dotter, General Crushed Stone Co., Easton, Pa.; J. L. Stevenson, Smith Engineering Co., Phila., Pa.; A. T. Goldbeck, engineering director, National Crushed Stone Assn., Washington, D. C.; H. B. Allen, The General Crushed Stone Co., Philadelphia, Pa.; Nicholas Cascetti, Stowe Trap Rock Co., Oreland, Pa.; G. E. Schaefer, The General Crushed Stone Co., Rochester, N. Y.; George Fraunfelder, Easton Car & Construction Co., Easton, Pa.; and Jack Judge, LeRoy Lime & Crushed Stone Corp., Rochester, N. Y.

Building Contract Volume Nears $1,000,000,000 Mark During Month of July

Building and construction contracts awarded in the 37 states east of the Rocky Mountains neared the billion-dollar mark in July to set the cumulative investment commitment volume for this year through July at a point 38 percent higher than that reported for the first seven months of last year.

F. W. Dodge Corporation revealed that the total of contracts in July in the states east of the Rockies, as based on its field reports, amounted to $962,685,000. This total was 46 percent higher than that reported for July of last year and 3 percent higher than the total for June of this year.

The sharp gains were reflected in all major classifications of construction, with nonresidential volume up 56 percent over July of last year and 8 percent over June, residential up 45 percent over July of last year and down 2 percent from June, and heavy engineering works up 31 percent over July of last year and 1 percent over June.

On a cumulative basis, all 15 regions showed an increase for the first seven months of the year as compared with the corresponding period of last year.

Newhard Succeeds Lofstedt In High Post at Penn-Dixie

B. W. Druckenmiller, president of the Pennsylvania-Dixie Cement Corporation, has announced the appointment of E. P. Newhard as operating manager, to succeed Carl J. Lofstedt, resigned.

Mr. Newhard received specialized training at Muhlenberg College. His early experience includes employment with the U. S. Geological Survey and the Atlas Portland Cement Company at Northampton, Pa., and at Hudson, N. Y. He was an assistant and later chief chemist of the Giant Portland Cement Company at Egypt, Pa., and Norfolk, Va., from 1910 to 1918.

From 1918 to 1926 he was chief chemist of the Clinchfield Portland Cement Company at Kingsport, Tenn., and from 1926 to 1932 chief chemist of the Southern Division of the Pennsylvania-Dixie Cement Corporation, with headquarters at Chattanooga, Tenn. From 1932 to 1944 he was superintendent of the Clinchfield, Ga., plant of the Pennsylvania-Dixie Cement Corporation.

From 1944 to his present appointment he has been general chemist of the Pennsylvania-Dixie Cement Corporation, in charge of chemical control and research.

The Pennsylvania-Dixie Cement Corporation has plants at Bath and Nazareth, Pa., Kingsport and Richard City, Tenn., Clinchfield, Ga., Des Moines, Iowa, and Portland Point, N. Y., and sales offices in New York City, Philadelphia and Nazareth, Pa., Atlanta, Ga., Des Moines, Iowa, Boston, Mass., and Chattanooga, Tenn.

E. P. Newhard

Sangravel Company Acquires Sister Diesel Towboats

The Sangravel Company, Inc., Nashville, Tenn., has two new towboats at work on the Cumberland and Tennessee Rivers—the *Missy* and the *Blanche*. Both boats are 42 feet long, 13 feet in beam, and 5½ feet in depth, molded. Both are powered by a 135-hp. diesel Caterpillar engine.

The Jeffersonville Boat & Machine Co., Jeffersonville, Ind., built the boats especially for sand and gravel towing. Each can push two barges. Fuel oil tanks hold 750 gallons. The lubricating oil tank holds 60 gallons. The engine is fully controlled from the pilot house.

• Left: The "Blanche" (left) and the "Missy" (right) of the Sangravel Co., during construction.

• Right: The 'Blanche" operating free of barges. The two tow-boats work the Cumberland and Tennessee Rivers.

"Mineral Wax" Now Mined By Ozokerite Mining Co. At Soldier Summit, Utah

Among the rarest and least-known of the nonmetallic minerals is ozokerite. The mine and plant of the Ozokerite Mining Co. at Soldier Summit, Utah, is believed to be the only operation in existence producing the material—known commercially as "mineral wax." But while the mineral itself is a rarity, it is in commonplace use as the basis of carbon papers and typewriter ribbons.

Ozokerite is closely related to gilsonite but, unlike the latter, it is noninflammable. A few scattered occurrences are known also to exist in the Balkans and in Turkestan, but these have not been worked commercially.

The Soldier Summit operations have been worked continuously since 1939 by the Ozokerite Mining Co. The deposits are gray to brown in appearance, occurring in veins in the sands and shales of the Green River formation.

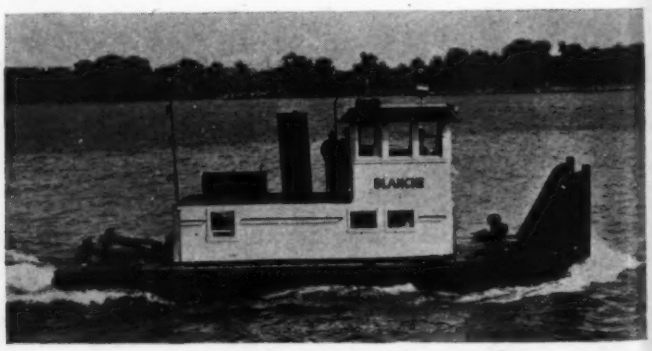
The ore is blasted down, hoisted to the surface and ground in the mill to minus ¼-in. for treatment. The separation is relatively simple, a gravity flotation process being employed. The ozokerite is light, having a gravity of .9, and floats on the water solution to permit a clean separation from the heavier rock and foreign material. The concentrate thus obtained is melted, blended with vegetable waxes and paraffins, and packed in 400-lb. drums for shipment.

Manufacturers of carbon paper and typewriter ribbon who buy the entire output need only to remelt and dye the product before applying it to the blank paper and ribbon fabric. Ozokerite goes only into the highest-quality paper and ribbon, however, as it is smudge-proof. Cheaper papers and ribbons use paraffin and vegetable waxes alone.

Limestone Products, Inc. Re-elects Officers, Directors

At the recent stockholders' meeting of Limestone Products, Inc., Cleburne, Tex., the following officers were re-elected for the current year: J. Lambert Lain, president; W. T. George, vice-president; W. E. Abbas, secretary-treasurer.

Also re-elected were the firm's directors: Dr. W. P. Ball, A. T. Lohman, J. W. Carpenter, Walter Conley, Lynn Davis and Judge R. B. Hinkes. The stockholders voted to increase the common stock for operating capital. W. R. Cliffe is plant engineer.



General Portland Cement Reports $1,859,300 Profit In Six-Month Period

According to President Smith W. Storey, the net profit of General Portland Cement Company for the six months ending June 30, 1948, totaled $1,859,300, after provision for federal income taxes, as compared with a net profit of $1,058,500 for the first half of 1947.

This profit was equal to $1.85 a share on 1,004,366 shares of common stock outstanding at the end of the period, as compared with $1.05 a share, based on the same number of shares, for the corresponding period of 1947.

Sales for the first half of 1948 were increased to $8,736,900 from $6,447,500 reported for the 1947 period; and total deductions, including costs and expenses and federal income taxes, increased to $6,877,600 from $5,389,000 reported for the first six months of 1947.

As a result of a recent decision by the Supreme Court of the United States concerning the basing point system of quoting prices, General Portland Cement Company late last month adopted a revised sales policy, said Mr. Storey.

"Under this policy," he said "the company offers cement principally on the basis of delivered prices consisting of a mill value per barrel of its various cements, as determined by the company for each of its plants, and rail freight charges from the company's plants to purchasers."

Manufacturing plants of the General Portland Cement Company are located at Tampa, Fla., Chattanooga, Tenn., Fort Worth, Houston and Dallas, Tex.

Hardinge Co. President Cites Threats to Small Operators

Harlow Hardinge, president of the Hardinge Company, Inc., manufacturers of heavy machinery, recently stated that the major threats to continued industrial activity are the dearth of "risk money" and further spiraling of prices and wages.

Mr. Hardinge, who made an 11,000-mile tour of industrial plants in the United States and Canada, made the following observation:

"In the mining field, particularly among the base metal industries, activity has increased, as a result of improved labor supply and a number of large projects which are contemplated. The small investor is practically out of the market, and as a result of being unable to obtain financial backing the new small operator is virtually non-existent. Unless our tax structure is altered to encourage the investment of so-called 'risk capital,' the small mining operations (an important source of business to machinery manufacturers) will disappear completely."

National Safety Congress To Convene October 18-22 For 26th Annual Meeting

Words which seldom were heard outside the laboratory three years ago are sprinkled liberally through the program for this year's National Safety Congress and Exposition, which will be held the week of October 18-22 in Chicago. "Atomic," "supersonic," "rocket," "jet" —such words mark the nation's technological advancement and with it the changing problems of industrial safety.

Nearly 10,000 safety-minded persons from all corners of the United States and other parts of the world will pour into Chicago for the 36th National Safety Council convention.

Most of the 200 sessions on all phases of safety will be concerned with subjects which have persisted through the years. A labor-management session will again bring together representatives of the A. F. of L., the C.I.O. and industrial management in a discussion of safety responsibilities and methods.

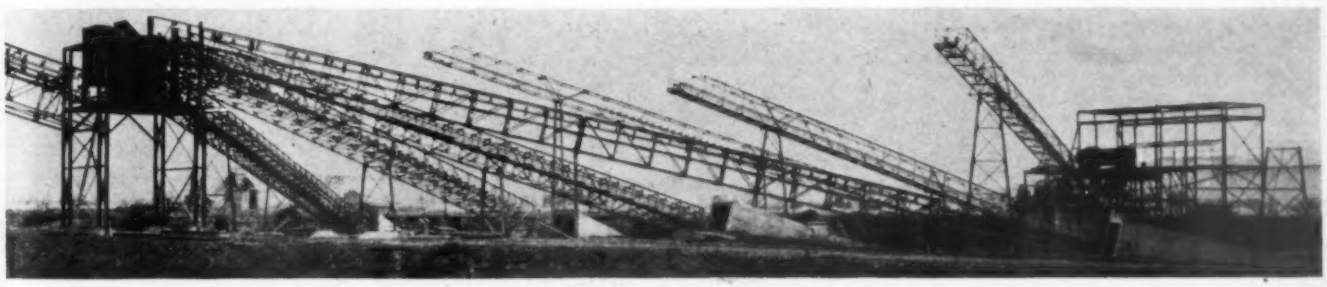
Sessions on industrial safety will be held at the Stevens, Congress and Morrison hotels, with the industrial exposition and motion pictures at the Stevens. Commercial vehicle and transit activities will be centered in the Morrison hotel, as will the school and college sessions.

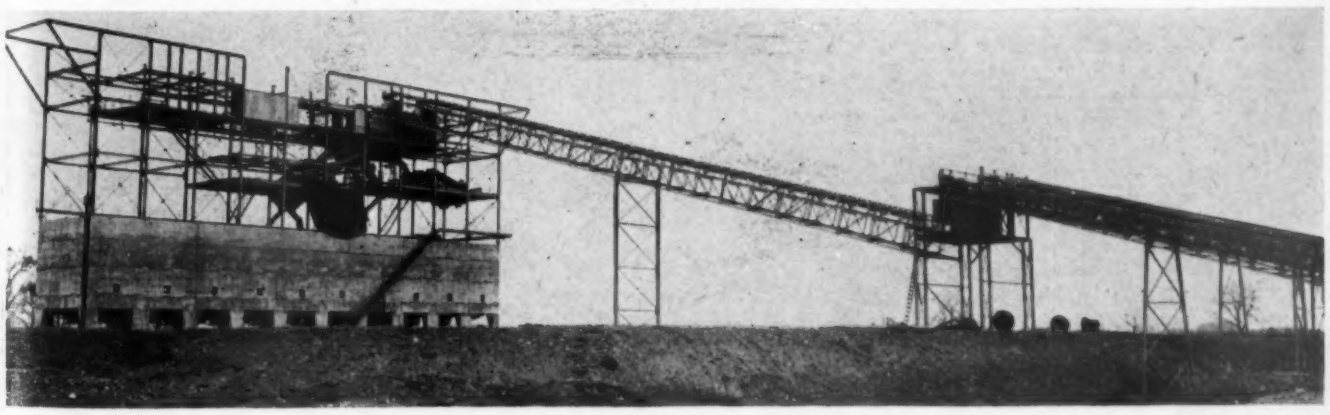
Mississippi Bauxite Report Issued by U. S. Mines Bureau

Wartime investigations of bauxite deposits in Union and Pontotoc counties of northeastern Mississippi are described in a publication released by the U. S. Bureau of Mines. Five new bauxite deposits, small and of low-grade, were found, according to the report. The investigations were conducted in 1943, with the assistance of the U. S. Geological Survey and the Mississippi Geological Survey.

• Two views of Pacific Coast Aggregates new plant at Eliot, Calif., during construction. In the upper picture are shown the various conveyor structures leading from the surge pile reclaiming tunnels. In the lower one the main conveyor to the washing and screening building is seen. Below the washing and screenings are 20 reinforced concrete loading bins.

Completion of this plant, said to be the largest of its kind in the world, will round out Pacific Coast's $7,000,000 replacement-expansion program. Together with other new facilities at Kerlinger and Centerville, the Eliot operation will boost the total production to 1,700 t.p.h., a net increase of 1,200 t.p.h. Cost of the Eliot plant is estimated at $2,000,000. These facilities, which replace the old Coast Rock & Gravel Co. plant, can produce and load more than 1,000 tons of material in an hour. Eight sizes of crushed rock, eight sizes of gravel and four sizes of sand will be turned out.





• Nearly 275,000 tons of limestone are excavated each year at this quarry, operated by the Russellville Stone Co. of Russellville, Inc. In this view, a 2-cu. yd. Lorain shovel is shown loading a big Euclid dump truck.

N.L.A. Announces Completion Of Seventh Wage Rate Survey

The National Lime Association has just finished compiling its Seventh Wage Rate Survey. Interest in wage rate surveys by the association continues to grow, and this year a record number of lime plants participated in the survey. The number of participating plants was 86, representing 71 companies in the United States and Canada. Over 80 percent of the total lime producing capacity of the United States was represented in this survey.

This report is broken down into geographical districts and into 21 different job classifications which are standard in most lime plants. The high, low, and average wage rate for each job classification is shown for each geographical district. Job classifications covered in this survey are as follows: average straight time hourly rate; bagger operators; blasters; common labor—quarry; common labor—plant; crusher operators; drillers — jackhammer; drillers — well; foremen — average; graders — lime; hydrator operators; kiln drawers; kiln repair masons; kiln firemen; loaders—quarry; mechanics, 1st class; mechanics, 2nd class; mechanics, helpers; shovel or crane operators; shovel firemen or helpers; truck drivers—plant and quarry, etc.

In addition, contract information is also tabulated covering the regular work week, the number of days per week that both kilns and quarries are operated, vacation plans, premium payment plans, etc.

A.S.M.E. to Co-Sponsor 1949 Materials Handling Show

The American Society of Mechanical Engineers has announced that the third National Materials Handling Exposition will be held at Convention Hall in Philadelphia January 10 through 14, 1949.

A.S.M.E., through its Materials Handling and Management Divisions, will co-sponsor the exposition and will conduct a concurrent materials-handling conference. Members of the association are urged by Carl Heyel, secretary for the conference committee, to send in their views on subjects for possible inclusion in the conference program.

Sulphur Concerns Carry On Joint Development Plan In Mexican Holdings

According to an announcement released by Eugene L. Norton, president of Mexican Gulf Sulphur Company, his firm has entered into an agreement with the Jefferson Lake Sulphur Company of New Orleans, La., to develop the former concern's sulphur properties in Mexico.

Under the terms of the agreement, Jefferson Lake will drill four wells in a deposit in Mexico and will move, during 1949, one of its sulphur plants (1500 ton-per-day capacity) to Mexico, where it is to be re-erected on Mexican Gulf property.

A further stipulation of the agreement is that the management, production and sales organization of Jefferson Lake will be at the disposal of Mexican Gulf.

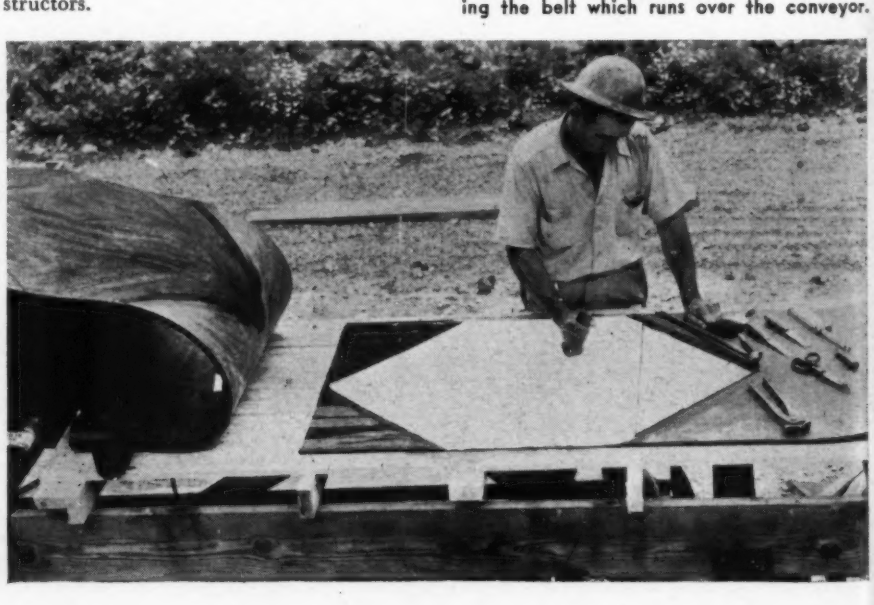
The U. S. Gypsum Co. plant in North Tonawanda, N. Y., is scheduled to reopen this fall, it was announced by H. M. Armstrong, works manager. The plant was closed in April, 1946, as a result of post-war material shortages.

Goodyear Furnishes Belting For 7-Mile Bull Shoals System

At the site of the Bull Shoals Dam in Arkansas the Flippin Materials Company has received the first shipment of Goodyear conveyor belting for the 7-mile-long transport system which will be used to deliver 650 tons of aggregate per hour to the plant.

The 36-in.-wide belting, made in sections, is being spliced together on the job. It will form the second-largest conveyor system ever constructed and will operate in a series of 21 flights from the quarry to the dam site on the White River. The main haul belts will weigh 360 tons and will travel over 9,000 steel troughing idlers.

The dam, which is scheduled to be completed in December, 1950, is being built by a group of nine contractors under the name of the Ozark Dam Constructors.



• Above: A section of the 7-mile belt conveyor system at Bull Shoals. • Below: Splicing the belt which runs over the conveyor.

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE October, 1918, issue of PIT AND QUARRY was full of news but had no outstanding features. It was notable chiefly for the plant operating articles it contained, as these covered not only a variety of industries but were also widely distributed geographically.

One of these articles described the new sand and gravel plant of the New England Sand & Gravel Co. at West Peabody, Mass., and the old plant it replaced. Both were hydraulic dredging operations but the use of belt conveyors in the new plant made possible reduction of the vertical head from 100 ft. to 20 ft. and eliminated the 12-in. Morris booster pump which formerly supplemented the 12-in. Morris pump on the dredge. Another interesting feature of this operation was that the sand and gravel deposit overlay a deposit of stone, a combination seldom found outside that area. A quarry formerly operated there was being used as a waste pond.

Another article gave a complete description of the operations of the National Stone Co. at Joliet, Ill. This quarry had then been in existence for 15 years and it is still being operated by the same company under the able guidance of W. N. Carter and Stuart Gardiner, who are still active as its president and treasurer, respectively. A feature of the plant then was that it was 100 percent electrically operated.

Perhaps the feature article was a very complete description of the rotary kiln lime plant of the Vermarco Lime Co. at West Rutland, Vt. Few important changes have since been made in this plant. Then as now this plant utilized the marble waste from the nearby operations of the Vermont Marble Co. This was one of the first lime plants in this country to depend entirely on rotary kilns, a choice which was forced on the company by the fact that the crystalline marble broke down into granular form on the application of heat, making the use of ordinary vertical kilns impossible.

The stone was reduced to kiln size by a series of four crushers, all made by companies later absorbed by the Allis-Chalmers Mfg. Co. The 8- by 120-ft. Vulcan kiln was fired by a gas producer. It was followed by a 5- by 50-ft. rotary cooler from which the lime went to storage bins. Hydrating was done in a 6-cylinder Kritzer continuous hydrator and this was followed by Raymond beater mills and an Urschell-Bates valve bagger. Capacity was about 90 tons of hydrate daily.

A recent addition to this plant was a pulverized-stone department which was supplied with stone from the lime plant bins. A Fuller mill reduced the stone to 100-mesh size for which there was a rapidly increasing demand as paint and putty filler and as agricultural limestone. This product was packed in valve bags in the same manner as the lime.

The fourth plant article described the manufacture of sand-lime brick, using as examples the then 17-year-old plant of the Saginaw Brick Co. at Saginaw, Mich., and the newer plant of the Belt Lime Brick Co. at Minneapolis, Minn. Both plants used Jackson & Church brick presses and high-pressure steam-curing cylinders. It is interesting to note that a plant capable of making 25,000 bricks in a 10-hour day could then be built for about $30,000.

"The Trade Acceptance" was the subject of an interesting article by Albert Moyer, then sales manager of the now defunct Vulcanite Portland Cement Co. This draft or bill of exchange, drawn by the seller on the purchaser, was suggested as a means of counteracting the then tightening money market and the growing capital needs.

Not the least interesting item in this issue was the announcement of a book, "Modern Management Applied to Construction," written by Daniel J. Hauer C.E., associate editor of PIT AND QUARRY, and published by the McGraw-Hill Book Co.

Other articles and items described the use of rock dust for combating explosions and fires in coal mines, the cost of heavy-duty truck haulage, the activities of the War Service Committee and other timely subjects.

Association activities were also given considerable space, those in the news including the Indiana Crushed Stone Assn., the Ohio Sand & Gravel Producers' Assn., and the Iowa Sand & Gravel Producers' Assn. The outstanding developments were the formation of the Michigan Sand & Gravel Producers' Assn., and the opening of an office in Washington by the National Assn. of Sand & Gravel Producers.

Bulletin Urges Exploitation of New Jersey's Mineral Supplies

Opportunities for commercial exploitation of New Jersey's mineral deposits by more than a score of industries in the state are cited in a bulletin released by the Bureau of Mineral Research at Rutgers University.

Prepared by Paul M. Tyler, consultant of the bureau in cooperation with the New Jersey State Department of Economic Development, the bulletin, entitled "The Mineral Needs of New Jersey Industries," states that the resources of the state provide opportunities for processing limestone, industrial sands, feldspar and ordinary red shale, green sand and nepheline syenite.

Other materials mentioned included feldspar, clays, apatite, limestone pigments, peat, sand and gravel. Freight savings through the use of local sands over imported varieties, it was stated, make feasible the exploitation of available resources. In some cases savings amount to as much as $3 per ton on sand.

National Safety Council Issues Directory of Safety Films

Available upon application to the National Safety Council, 20 N. Wacker Drive, Chicago, Ill., is the newly published *National Directory of Safety Films.*

The book is described as a "comprehensive listing of 403 motion pictures and slide films . . . for safety education within business and industry . . . Classified and indexed, with film synopsis, type, source and availability for purchase, rental or loan." Price of the directory is 25 cents per copy.

• At the Yakima Cement Products Company's plant near Yakima, Wash., a Sauerman slackline cableway with a 3-cu. yd. bucket is used to excavate gravel. It is operated by means of a 2-drum hoist over a 450-ft. span from the pit to the plant.

WASHINGTON NEWS LETTER

By S. HERBERT UNTERBERGER

IT IS difficult to find many achievements to report of the late but unlamented special session of Congress. Nevertheless, it will probably turn out to have served its *political* purposes well.

The President and those Democrats who have not withdrawn their support from him got what they wanted, namely, a more extended record on which to pin the "do-nothing" label. Much will be heard in the ensuing campaign about lack of action on the President's program for economic betterment. But the Democrats also got many things they didn't want. The civil rights debate focused further unwelcome attention on the essential split in their ranks. The special session also furnished the backdrop against which the sensational drama of spies in high places was enacted. Much more will be heard of this in the torrent of oratory which is expected to exceed the records established by all previous presidential campaigns. Radio, and its exhibitionist offspring, television, will see to that.

If you are one of those who is going to have to borrow money in the near future, the special session of Congress will have a more direct effect. As a result of its actions, you will probably find it somewhat harder to get a loan, and you are likely to have to pay a higher interest rate for it. Congress did two main things in the field of credit control. It reimposed controls on instalment buying similar to those operating during World War II. For example, to buy a car, one is again required to make a one-third down payment, and the balance must be paid off in eighteen months. While this will have little effect on business loans directly, it does contribute toward developing an atmosphere of increased conservatism in lending policy. Of more direct consequence, however, is the authority granted by Congress to the Federal Reserve Banks to increase the required bank reserves. An increase for the New York and Chicago banks from 24 to the newly authorized 30 percent of their deposits, for other city banks from 20 to 24 percent, and for country banks from 14 to 18 percent would require keeping an additional $3,500,000,000 in reserve. At least this much money would be unavailable for loans. As a matter of fact, the operation of the banking system is such that an increase in the reserve requirements generally has an effect beyond this initial impact.

As part of this trend toward tighter credit conditions, several other moves have been made in Washington. Twice since May the Treasury has increased the interest rates on short-term (one-year) borrowings. In that period, the rate has gone from .0875 percent to 1.25 percent. Moreover, the Federal Reserve Bank has raised its rediscount rate, that is the interest rate at which it will lend to its member commercial banks, from 1.25 to 1.5 percent. While each of these items taken separately is of only minor importance, together, they signify a definite trend. The banks find themselves in this position: the amount of available funds for lending is being shrunk by the increase in reserve requirements; to increase this amount by rediscounting is becoming progressively more expensive; and what funds they do have can be lent to the U. S. Treasury with complete safety at increasing rates. It is no wonder that when a businessman comes to borrow, the prudent banker will look at the security offered with great care and will make loans only at increased interest rates.

But Congress and the government have made an important exception to the tighter credit rule, an exception affecting the pit-and-quarry industries—namely housing. Almost every supplier of building materials can expect to feel the impact of legislation related to construction. Instead of raising interest rates, the objective of these measures is to keep them down. Instead of making it hard to borrow money for projects involving a risk, steps have been taken to ease the process. All this is accomplished by the simple technique of having the government assume much of the risk in real estate loans. As a result of congressional action, mortgages on rental projects are insured up to 90 percent of cost (on cooperatives, up to 95 percent), and investors are guaranteed a yield of 2.75 percent, plus 2 percent a year for amortization. Furthermore, the government is now authorized to buy twice as many mortgages from investors who find themselves overloaded, and there are several other liberalizing provisions. There is one catch: where the government insures the loan, it insists on a relatively low interest rate and a low cost per unit. How much additional building will be forthcoming under these conditions is still uncertain. Nevertheless, this loose credit policy for home building has probably assured a continuing boom in that field for some time to come.

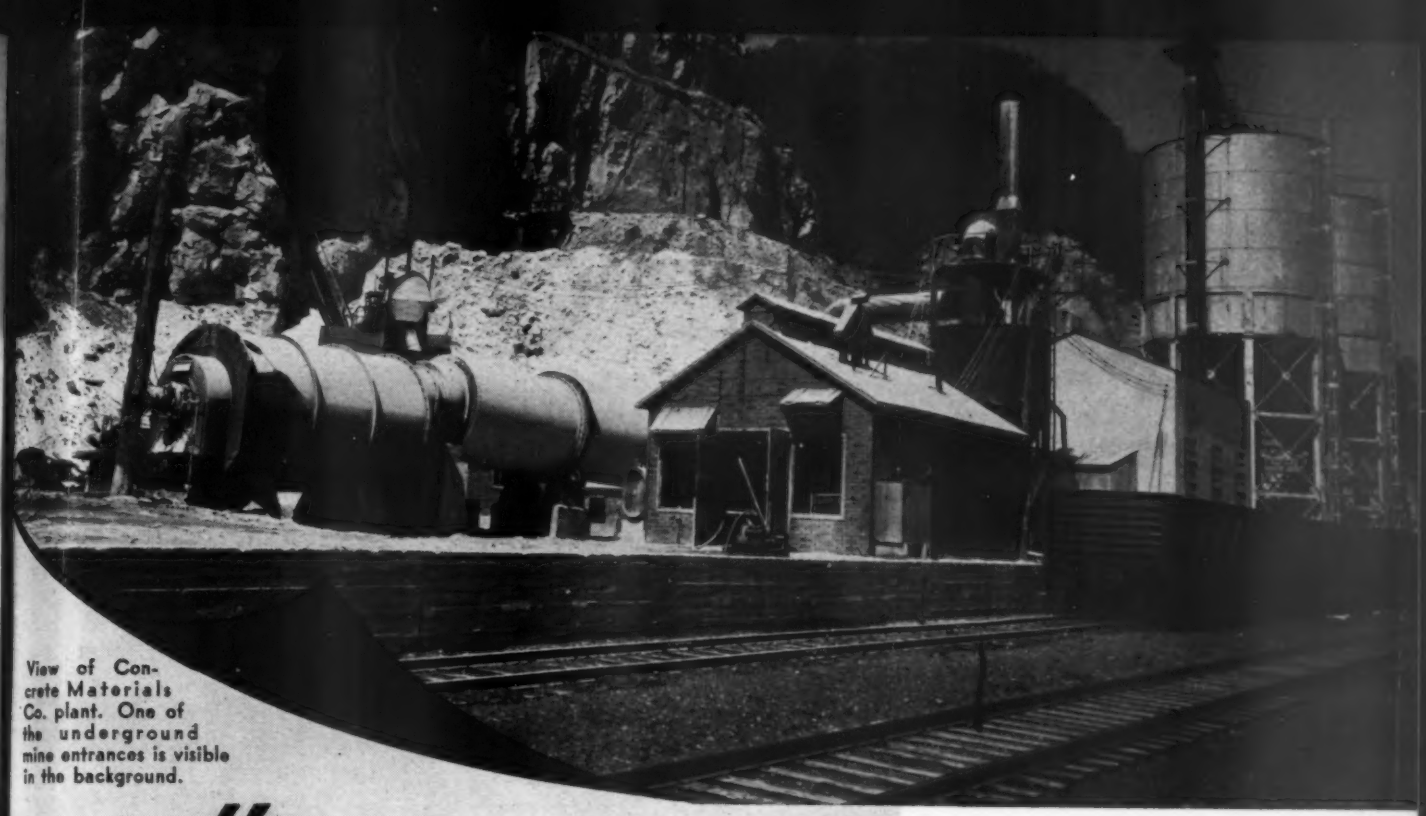
Even before Congress took this action, the government had "upped" its estimate of the volume of new construction activity which would occur in 1948. In 1947, new construction amounted to almost $14 billion. According to the revised estimate of the Department of Commerce prepared in July, 1948, new construction activity in 1948 will approximate $18,000,000,000. This is an increase of almost 30 percent. In November, 1947, the same department thought that in 1948 new construction activity would amount to only $15,200,000,000. The table on page 84 breaks down these figures so that the changes in the various types of construction can be observed.

In explaining its revision, the Department of Commerce says, "The most important single element in the increase in the estimate for 1948 is found in private residential construction. In this case, the change in the outlook for the year, from $6,000,000,000 as it appeared in November to $7,100,000,000 as it appears at the present time, is due chiefly to the fact that the average construction cost of the houses built this year is turning out to be substantially higher than expected.

"The $7,100,000,000 figure for privately financed non-farm residential building is the largest single category in the new construction estimate, constituting 39 percent of the total. For the year as a whole, private residential building is expected to show an increase of 35 percent over the figure for 1947."

Of interest, as well, are the estimates for some of the other types of construction. Among nonresiden-

(*Continued on page* 84)



View of Concrete Materials Co. plant. One of the underground mine entrances is visible in the background.

GOING UNDERGROUND FOR SILICA SAND

Attaching the quarry bar to the shovel bucket makes height, swing and drill positioning one operation.

By EDWARD BRUNENKANT

another ON THE SPOT report

IN 1947 Concrete Materials Co. completed a new silica sand plant at Clayton, Ia. This new addition to the company's growing chain of nonmetallic mineral plants rounded out their line of diversified products and also established more firmly Concrete Materials Co., with its affiliates as one of the larger producers of nonmetallics in the Midwest—if not the largest.

The Clayton silica sand plant is ideally situated, with both the Mississippi River and C.M.S.P. & P. railroad running alongside. The lease embraces 160 acres of land with foreseeable deposits sufficient for the next 60 years of continuous operation. Although present production is shipped wholly to foundries, tests have indicated that the 98 percent pure silica product is ideal for use in the manufacture of glass.

Before the Concrete Materials Co. took up the lease on this property, the deposit had been previously exploited, in minute quantities, by a strip mine. In view, however, of the presence of a 100-ft. layer of overburden, it appeared more feasible to switch to underground

operations. The switch also insured uninterrupted year-round operations.

Accordingly, the company dismantled what remained of the old plant and proceeded to build new facilities suitable for the processing of silica sand recovered by underground mining. Plans for the plant were drawn by T. E. Rust, vice-president and chief engineer of Concrete Materials. Dean Jones, who is now superintendent of the plant, supervised the actual construction.

Because of excessive overburden and the desire to maintain year-round operations, Concrete Materials Co. found it desirable to employ underground recovery in this plant.

The mine was opened with two adits approximately 40 ft. above ground level. Initial penetrations were sunk with jackhammers worked from platforms suspended with cables from the top. When the horizontal entries were large enough, a ¾-cu. yd. Northwest electric shovel and a Worthington wagon drill were lifted into the tunnels. Material taken from the original shaft has been stockpiled to be used in the event that excavation is halted by a shovel or drill breakdown.

The 2-entry room-and-pillar method of mining is used to extract a 24-ft., approximately horizontal bed of silica sand. The rooms average 34 ft. wide and 24 ft. high, with 50-ft. staggered pillars left between rooms, giving the overall appearance of a huge checkerboard. All mining is done while advancing.

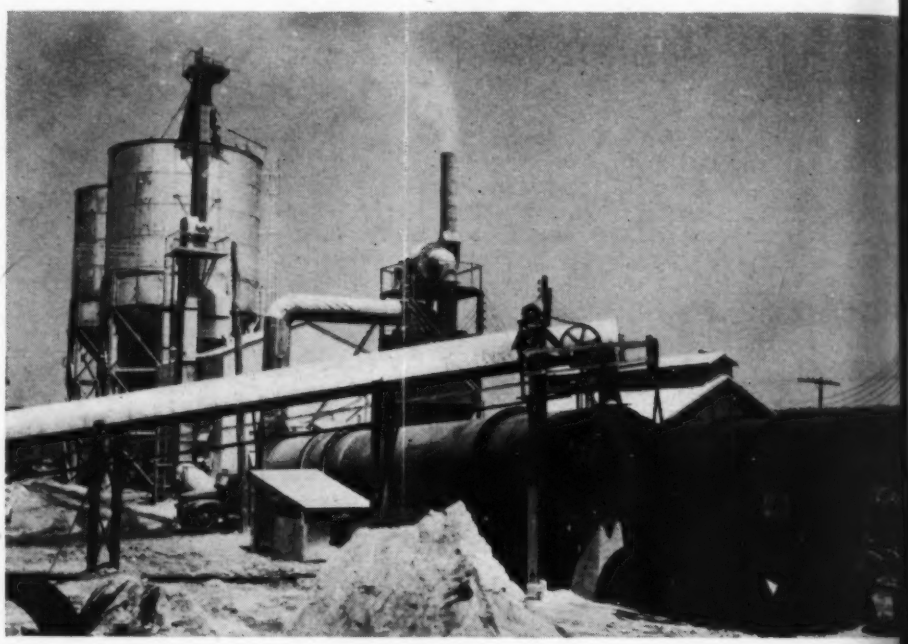
Blast holes are sunk 12 ft. deep with the wagon drill mounted on a quarry bar which is clamped to the shovel bucket (see illustration). With this arrangement, positioning of the drill, height and swing is accomplished in one operation. Attachment of the quarry bar to the shovel can be done in a few minutes. Drilling is done wet and detachable bits are used.

At present, while the mine is under development, drilling and blasting are done on alternate days, with the plant shutting down every other day. Approximately 500 tons of sand are blasted loose in each room with an average of 300 lbs. of powder used for each 500 tons. Du Pont delayed action caps are used to detonate the charge. Sufficient natural moisture, 3 to 4 percent, in the deposit, prevents excessive dust due to the action of moving equipment.

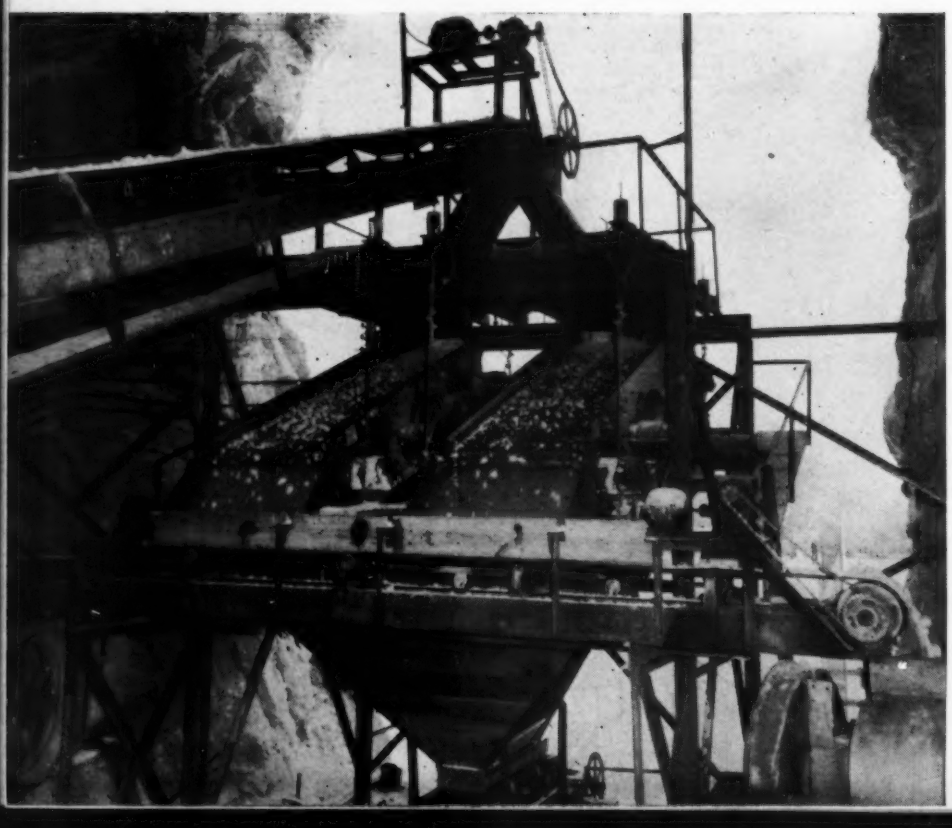
Electricity to run the Northwest shovel and other equipment is generated with a General Motors 225 k.v.a. generator set powered with a G.M. twin diesel. A Caterpillar D8-800 diesel-generator provides standby power in case of breakdown. Mechanical methods of ventilation are not provided, as the two entries permit adequate introduction of fresh air. In addition the movement of the Koehring 6-cu. yd. Dumptor, which moves the sand from the shovel to the primary crusher, further stimulates the movement of air within the mine.

All primary and secondary crushing and screening equipment has been erected within the mine itself, just in back of one of the entries. The Dumptor discharges the sand onto a 36-in. homemade belt feeder

(*Continued on page* 88)



All primary and secondary crushing and screening equipment was erected inside the mine. Here we see the sand being sized on two double-deck vibrating screens. Two crushers, one in each side, reduce the oversize off the top decks.



A closeup view of the feed end of the dryer. The rate of feed, approximately 50 t.p.h., is controlled by a flat belt feeder. Moisture content of the silica sand is reduced by passage through the dryer from 4 percent to less than 1 percent.

Carney Company Expands Rock Wool Plant at Mankato for Third Time

New Batt Unit Increases Output To 50,000,000 Sq. Ft. Annually

another ON THE SPOT report

THE Carney Company of Mankato, Minn., was the first concern in the northwest section of the United States to undertake the production of mineral wool. The first facilities for its production went into operation at Mankato in 1939, after extensive pilot plant studies at the company's cement mill. Since that time repeated expansion programs have been carried out in a determined effort to keep abreast with the soaring demand for this prime insulating material. In 1940 production was doubled with the installation of a second cupola, and at the same time a batt machine was added to the plant. In 1942 a third cupola was built.

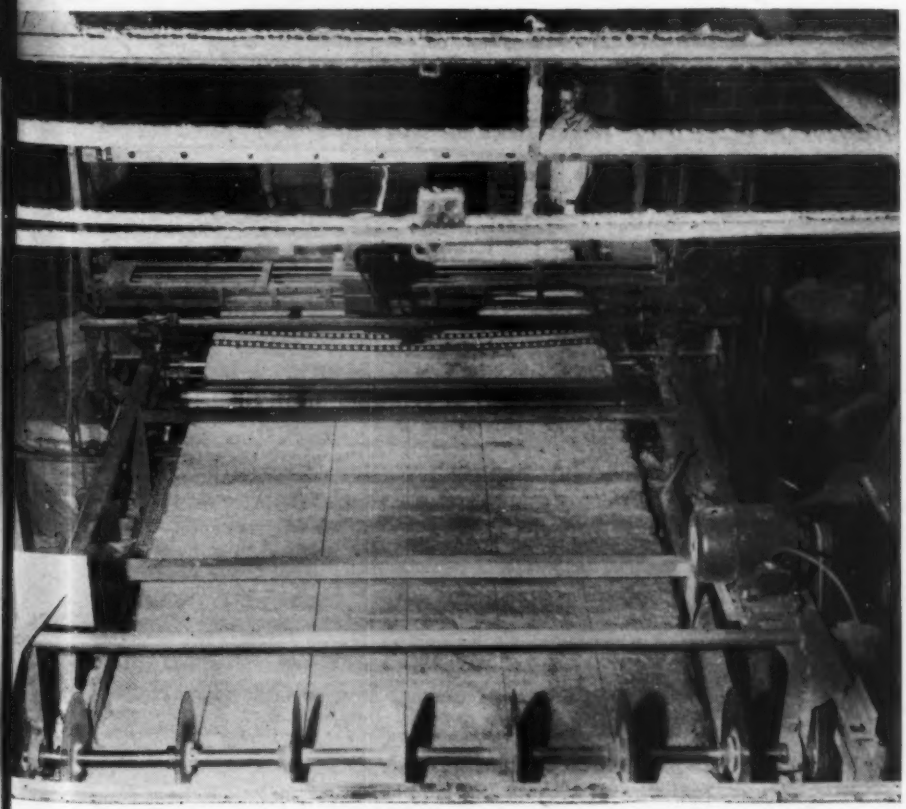
Notwithstanding this rapid expansion of what started out as a sideline business, by 1946 the company was again swamped with back orders, and a third expansion program involving expenditures of more than $100,000 was launched. Completed by mid-1947, this program included the installation of a fourth cupola and a second batt machine, increasing Carney's production of Golden Fleece insulation batts to about 50,000,000 sq. ft. per year. The batt machines now in operation produce close to 215,000 sq. ft. of house and industrial batts every 24 hours. Output of granulated wool runs about 30 tons per cupola per day, or 60 tons for the plant.

By WILLIAM M. AVERY

The Carney Company controls several hundred acres of main quarry land comprising nearly 30,000,000 tons of stone, in addition to several smaller parcels aggregating some 10,000,000 tons. With one exception, these deposits contain all the materials needed in the production of Carney's growing list of products. Slag for rock wool production is shipped in by rail from Illinois and Indiana, and blended with quarry shale to make up the feed for the cupolas. Straight stone feed, which was used for a time, was found to melt at about half the speed of slag, and to consume correspondingly larger quantities of coke.

The main quarry, which is located adjacent to the rock wool plant, also supplies stone for the production of natural cement, masonry cement, bricklayer's mortar, mason's lime and crushed stone products. The 35-ft. face is worked on 10-ft. ledges, using an Ingersoll-Rand wagon drill, and firing 50 to 75 holes instantaneously with Du Pont 40-percent dynamite and electric caps. The stone shatters well and requires relatively little secondary blasting. Loading is done with a ¾-cu. yd. Link-Belt Speeder shovel into end dump trucks which make the 1,500-ft. haul to the crushing plant.

The pink shale used in rock wool production lies in a 3-ft. stratum under about 14 ft. of lime rock.



• The delivery end of the Carney Company's new rock wool batt machine at Mankato, Minn. Splitter knives in the foreground cut the blanket into strips of the required width. The power cross-cut knife in the background automatically cuts the batts to length.

• The wool blanket is formed in a downdraft blow chamber. The material is being taken off here on the belt conveyor to make granulated wool.

Below the shale there is another 10-ft. layer of lime rock and then about 8 ft. of natural cement rock. The various strata are worked and loaded separately in order to avoid contamination. Carney's Golden Fleece trade name is based on the unusual golden-pink color imparted to the batts by the blending of shale from the company's own quarry. Shale for rock wool production is stockpiled at the quarry and trucked to the plant as needed.

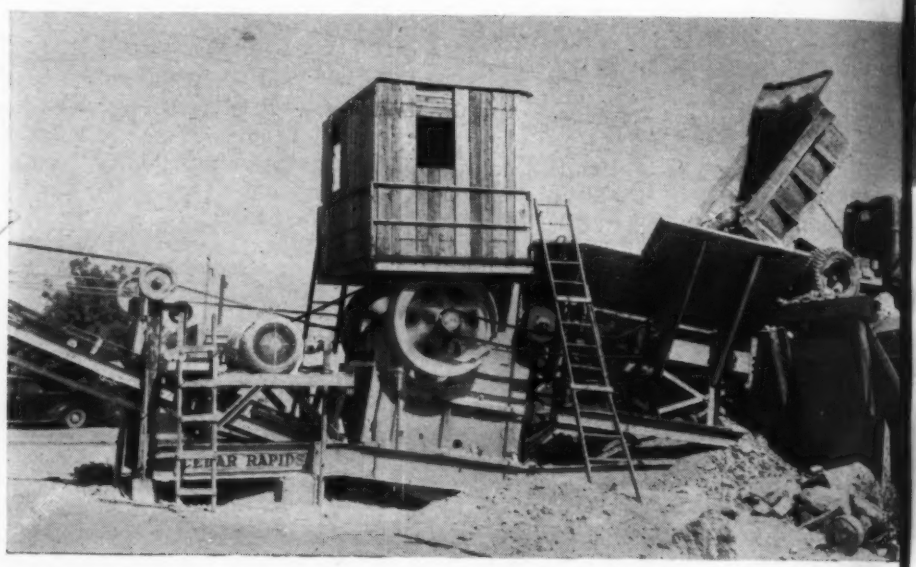
Except in the production of industrial batts, the quantity of shale used is actually quite small—about 1 part of shale to 5 parts of slag. In addition to imparting color to the wool, the shale effects a definite improvement in the quality of the fibers. However, the company has produced top quality mineral wool without using any shale. For making industrial batts the practice is to blend shale and slag in about equal proportions in order to increase the density of the wool somewhat. When this practice is followed the finished product weighs 4½ to 5 lbs. per cu. ft.

The materials are proportioned by weight at one end of the wool plant. Two mono-rail buckets are charged from either side of a material hopper at ground level, weighed on Fairbanks-Morse platform scales, and elevated on inclined mono-rails to the cupola charging floor. A batch consists of about 1,000 lbs. of 1½- to 2-in. slag. 200 lbs. of shale and 200 lbs. of coke. A switching arrangement on the charging floor permits each mono-rail bucket to serve two cupolas. In an 8-hr. period about thirty 1,200-lb. charges are fed to each cupola. The three older cupolas are 50 in. in diameter; the newest, designated as No. 4, measures 58 in. All four units are about 20 ft. high.

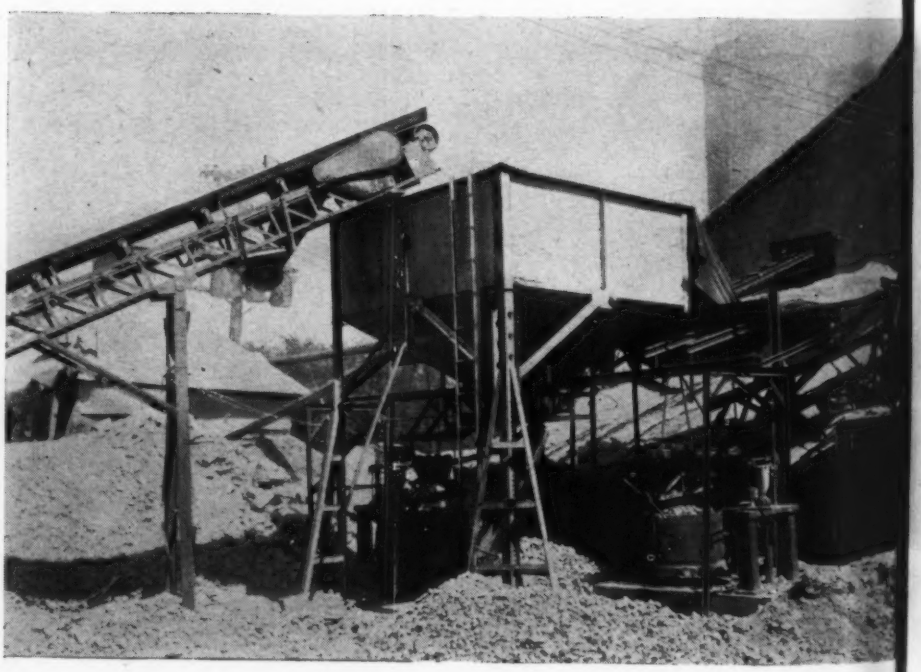
The melt is carried out at temperatures of around 2,700 degrees F., and the molten rock is discharged continuously through nozzles at the base of the cupolas. Fibers are produced by blasting the molten slag with steam as it flows from the cupolas. With the exception of No. 3, each of the units has six jets. Waterproofing materials, oils (to make the product easier to handle and to reduce dust), and asphaltic binders (for batts only) are introduced at the steam jets. These materials are stored and mixed in a separate building adjacent to the main plant.

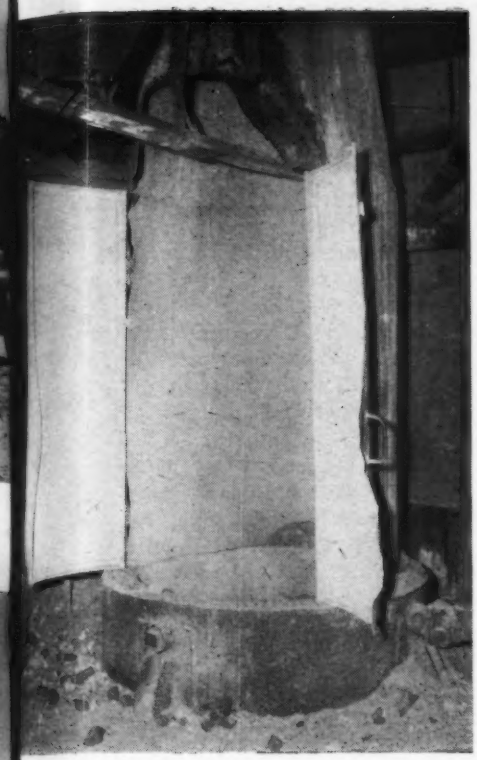
The force of the steam blast carries the fibers into blow chambers,

• Shale for the rock wool plant, as well as stone for other purposes, comes from the company's own quarry.



• Above: A view of the primary jaw crusher at the stone plant.
• Below: Slag, shale and coke for the rock wool plant are batched in mono-rail buckets at this weigh station adjacent to the plant building.





where they settle onto a moving chain belt conveyor. All four blow chambers are about 90 ft. long by 20 ft. high; on the batt lines they are 105 in. wide, as against 40 in. on the two lines which turn out granulated wool. Each chamber has a down draft to hasten the settling of the fibers.

From the blow chambers the wool fibers pass into annealing furnaces which are about 22 ft. long. Here the binders are set at temperatures ranging from 350 to 400 deg. F. From this point the loose wool drops onto a belt conveyor and is fed to a granulator in which the material is shredded and beaten into granules of the desired size. Shot is removed by passing the granulated wool through a 7-ft. diameter by 20-ft. rotary screen with ⅛-in openings. The finished granules are packed in 40-lb. Multiwall bags.

In batt production the wool blanket is split into six strips by circular knives, and vapor-seal paper is applied to one surface. At the end of the production line a circular knife operating on a cross carriage automatically cuts the strips into batts of the required length. The batts are packed in cardboard cartons for shipment.

The newest of Carney's several producing plants at Mankato is the crushing plant, which went into operation in November 1945 and was described in detail in the January 1946 issue of PIT AND QUARRY. Prior to that time the company had quarried stone for its own needs alone. After the rock was blasted out, it was broken by hand into approximately 4- by 6-in. pieces, and loaded (by the same means) into stone gondolas which were hoisted to the top of the quarry by means of a derrick. Twenty men were kept busy just in the breaking operation, and the total number employed in preparing raw stone for the various processing units was closer to 30. At present the quarry and the crushing plant (which produces stone for commercial purposes as well as for the various processing units) employ only 15 men.

At the crushing plant the quarry trucks dump from a ramp into a apron feeder ahead of a Cedarrapids jaw crusher set at 8 in. Plus 3-in. stone is scalped off on a Cedarapids

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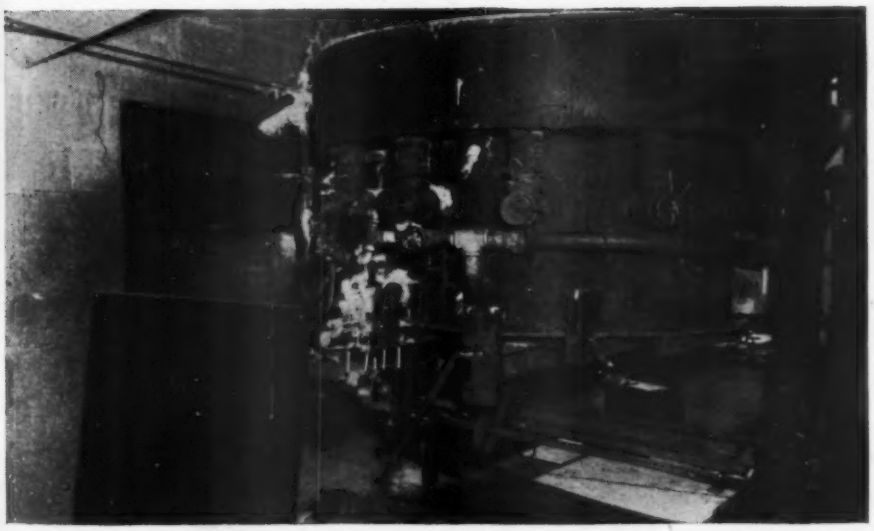
• **Left: The cupolas are charged through doors in the tops. Buckets run in on monorail and are discharged.**



• **Left: Molten slag from the cupola is divided into six streams, and blasted with live steam to form fibers.**

• **Below: A general view of one of the batt lines, showing the annealing furnaces at the left.**

Lubrication of Underground Mining Machinery

Part II

Reprinted from *Lubrication* by permission of The Texas Co.

MECHANICAL LOADING

Loading is a most important procedure in mechanized mining. It has a decided effect upon the rate of production. Specially designed coal and ore loaders for underground service have been developed for mechanically loading the materials into mine cars for handling to aboveground machinery. The development of the mechanical loader was a valuable contribution to the program of power mining which has become such a factor in increasing production and decreasing cost per ton.

The modern coal loader is a combination gathering, conveying and materials-handling device. The gathering and scraping mechanisms dig into the loosened coal or ore and drag it onto the conveying unit which in turn delivers it to the mine cars. It is an interesting device in contrast with the shovel-loader which is used in other types of mining.

All the mechanisms of either of these machines must function in intimate contact with abrasive materials which are decidedly conducive to wear. To offset this wear, the gears, chains and bearings must be properly lubricated at all times.

Methods of Lubrication The modern loader is designed for automatic oil lubrication or grease by a hand-operated or power-driven gun, according to the design and arrangement of the parts to be lubricated. Where the gears and bearings can be served from a central reservoir, a relatively heavy-bodied straight mineral oil is suitable. The viscosity will be adequate to assure of gear tooth protection, yet the lubricant will be possessed of sufficient fluidity to enable it to carry through the bearing clearances.

Hydraulic Power Oil hydraulic power has greatly increased the efficiency of the modern mechanical loader by improving its materials-handling ability. For this purpose a high grade of hydraulic oil should be used. It must resist emulsification or sludging in the presence of moisture, protect against rust, resist oxidation and still be capable of lubricating all parts within the system which may require lubrication. Plungers and plunger rods and valves must work freely at all times, otherwise the purpose of hydraulic operation will be defeated.

External Parts There are also some exposed parts which must be lubricated. Their protection is most important due to the possibility of wear by contact with abrasive materials. Periodic lubrication is usual on such parts, using a medium-consistency cup grease or light medium straight mineral oil according to the means provided for application. Exposed gears, however, require a heavier lubricant, of from 1000 to 2000 Second Saybolt Universal viscosity at 210 deg. F. Such a product resists loss by centrifugal force and sticks tenaciously to the gear teeth. It should be applied sparingly, however, as excess tends to accumulate foreign matter ultimately causing wear or even tooth breakage if the mixture packs between the gear teeth.

MECHANICAL HAULAGE

Until underground mining methods were mechanized, manpower and the mule were the controlling elements which dictated how much tonnage could be produced per day. The coal cutter, the mechanical loader and the conveyor changed all this with the result that electric mine locomotives and mine car wheel bearings were greatly improved.

Mine Cars Mine cars interest us from a lubrication angle since free rolling wheel bearings are necessary to be sure that maximum drawbar load is handled by the locomotive with minimum power consumption.

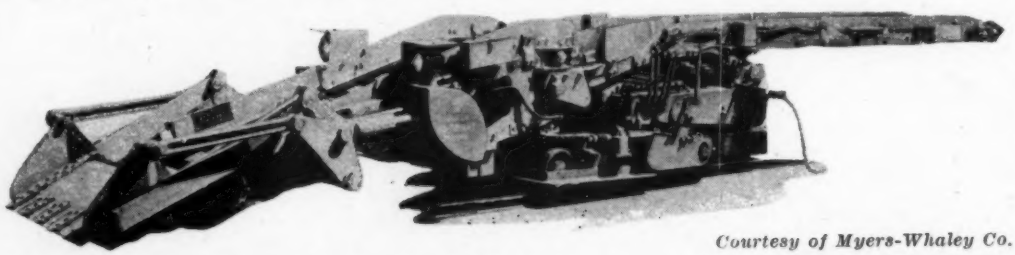
Mine car wheel lubrication has received considerable attention inasmuch as the volume of lubricants required is oftentimes the largest on the mine lubrication schedule. Accordingly, it is well to know more about the details of design, the provisions for lubrication, the operating conditions which may prevail and the lubrication schedule.

Design is of particular interest. It involves the constructional features of the plain sleeve type bearing as compared with the hollow axle type or the cavity type of wheel; likewise, the relative contrast of these sleeve type bearing details as compared with ball or roller bearing applications to mine car wheels.

The Plain or Sleeve Type Bearing The conventional sleeve type mine car wheel bearing is patterned after the railway car wheel bearing, being designed to enable the use of oil-saturated wool yarn or waste packing.

Effective lubrication is assured by regular attention to loosening of the cotton or wool waste, or oil-carrying material and resaturating with a suitable grade of straight mineral machine or car oil, or a light grade of liquid grease. Matting or glazing of the oil-carrying materials should never be allowed to occur; this will reduce the capillarity of the packing and prevent free circulation of lubricant. Turning the wool yarn occasionally will retard the tendency towards glazing and will lengthen the life of the packing.

The Hollow Axle This involves a hollow axle of tubular steel, the hole extending completely through the axle, which acts as a reservoir for lubricant. At the outer part of the axle, near each end is a steel cup and a spring-loaded valve similar to an ordinary check valve with the exception that the guide is several inches long. A spiral spring encircles the valve stem and compels the valve to maintain a bearing on the seat, thus preventing leakage of the lubricant from the axle. At the point on the axle corresponding to the bearing surface of the wheels, the



Courtesy of Myers-Whaley Co.

Fig. 7. The Whaley "Automat" loading shovel. This machine is designed for "Centro-Matic" lubrication.

axle tube is perforated sufficiently to permit passage of the lubricant from within the axle outward to the contact surface of the axle with the inner bushing of the wheel hub. A grease of compartively low consistency is well-adapted to this type of design, although the construction will permit of oil lubrication where desired. A charge of lubricant within the axle will usually last from 3 to 4 months without renewal where axle sealing valves function effectively.

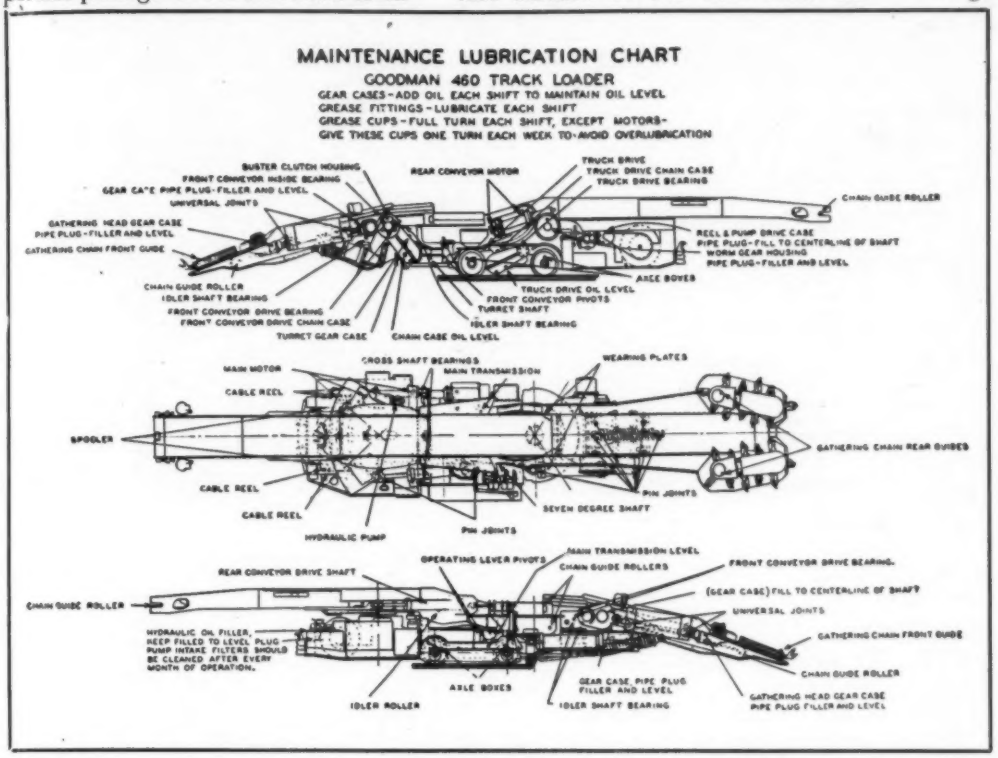
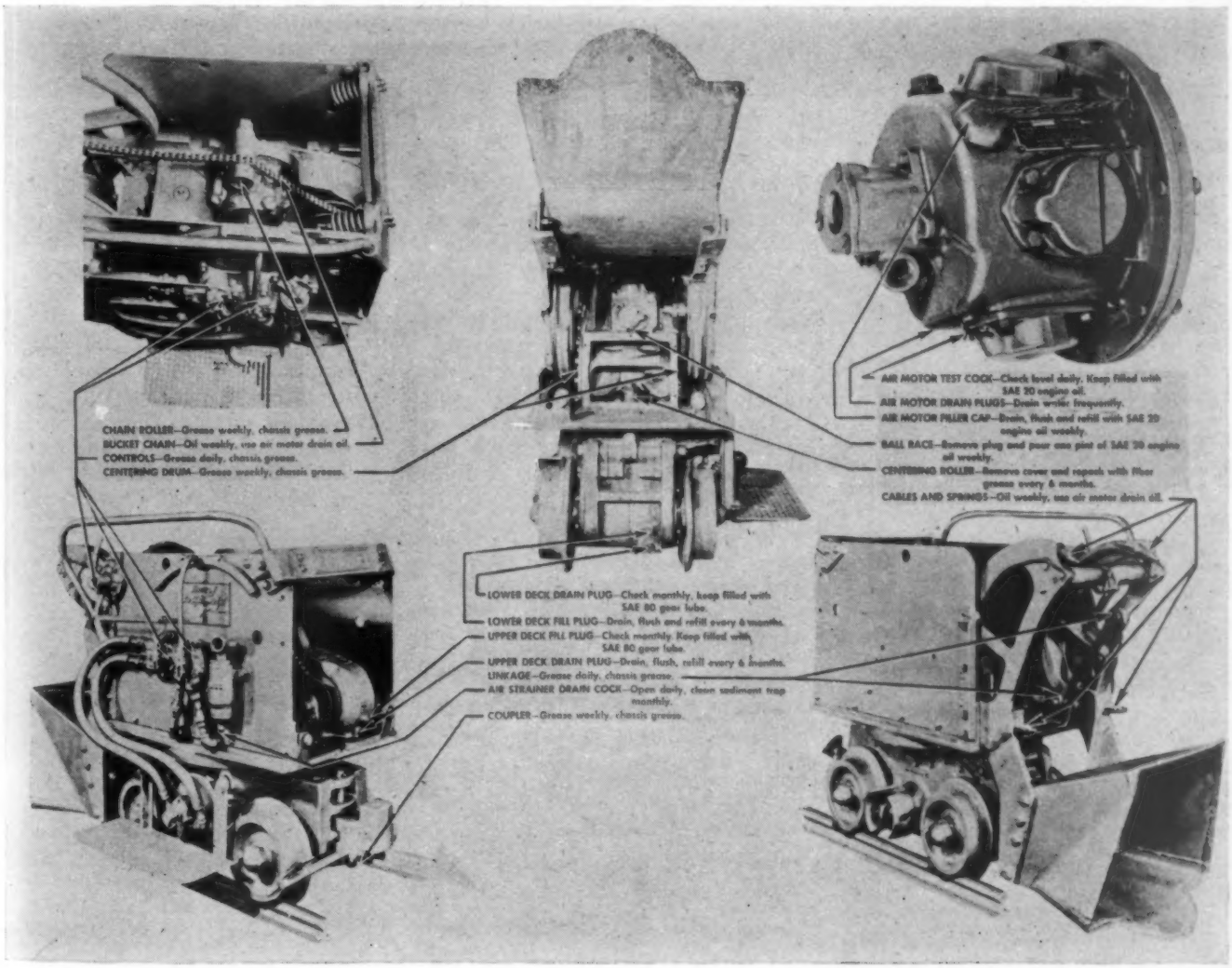

MAINTENANCE LUBRICATION CHART
GOODMAN 460 TRACK LOADER
GEAR CASES - ADD OIL EACH SHIFT TO MAINTAIN OIL LEVEL
GREASE FITTINGS - LUBRICATE EACH SHIFT
GREASE CUPS - FULL TURN EACH SHIFT, EXCEPT MOTORS - GIVE THESE CUPS ONE TURN EACH WEEK TO AVOID OVERLUBRICATION
BUSTER CLUTCH HOUSING
FRONT CONVEYOR INSIDE BEARING
GEAR CASE PIPE PLUG-FILLER AND LEVEL
UNIVERSAL JOINTS
GATHERING HEAD GEAR CASE PIPE PLUG-FILLER AND LEVEL
GATHERING CHAIN FRONT GUIDE
REAR CONVEYOR MOTOR
TRUCK DRIVE
TRUCK DRIVE CHAIN CASE
TRUCK DRIVE BEARING
CHAIN GUIDE ROLLER
REEL & PUMP DRIVE CASE PIPE PLUG - FILL TO CENTERLINE OF SHAFT
WORM GEAR HOUSING PIPE PLUG - FILLER AND LEVEL
AXLE BOXES
CHAIN GUIDE ROLLER IDLER SHAFT BEARING
FRONT CONVEYOR DRIVE BEARING
FRONT CONVEYOR DRIVE CHAIN CASE
TURRET GEAR CASE
TRUCK DRIVE OIL LEVEL
FRONT CONVEYOR PIVOTS
TURRET SHAFT
IDLER SHAFT BEARING
CHAIN CASE OIL LEVEL
MAIN MOTOR
CABLE REEL
CROSS SHAFT BEARINGS
MAIN TRANSMISSION
WEARING PLATES
SPOOLER
GATHERING CHAIN REAR GUIDES
CABLE REEL
CABLE REEL
PIN JOINTS
SEVEN DEGREE SHAFT
HYDRAULIC PUMP
PIN JOINTS
OPERATING LEVER PIVOTS
MAIN TRANSMISSION LEVEL
REAR CONVEYOR DRIVE SHAFT
CHAIN GUIDE ROLLERS
FRONT CONVEYOR DRIVE BEARING
(GEAR CASE) FILL TO CENTERLINE OF SHAFT
CHAIN GUIDE ROLLER
UNIVERSAL JOINTS
HYDRAULIC OIL FILLER, KEEP FILLED TO LEVEL PLUG PUMP INTAKE FILTERS SHOULD BE CLEANED AFTER EVERY MONTH OF OPERATION.
GATHERING CHAIN FRONT GUIDE
CHAIN GUIDE ROLLER
AXLE BOXES
GEAR CASE PIPE PLUG FILLER AND LEVEL
GATHERING HEAD GEAR CASE PIPE PLUG FILLER AND LEVEL
IDLER ROLLER
IDLER SHAFT BEARING

Fig. 8. Above.

Fig. 9. Below: Lubrication chart for Eimco Model 128, 21 rocker shovel.

Cavity or Self-Oiling Wheels This type of mine car wheel is lubricated from an oil or grease reservoir around the hub. The lubricant is fed to the axle or journal through portholes staggered in the hub. Such delivery of lubricant, however, only occurs when the car is idle or running slowly. At higher speeds centrifugal force tends to carry the lubricant to the outer surface of the reservoir. Due to possibility of


CHAIN ROLLER—Grease weekly, chassis grease.
BUCKET CHAIN—Oil weekly, use air motor drain oil.
CONTROLS—Grease daily, chassis grease.
CENTERING DRUM—Grease weekly, chassis grease.
AIR MOTOR TEST COCK—Check level daily. Keep filled with SAE 20 engine oil.
AIR MOTOR DRAIN PLUGS—Drain water frequently.
AIR MOTOR FILLER CAP—Drain, flush and refill with SAE 20 engine oil weekly.
BALL RACE—Remove plug and pour one pint of SAE 20 engine oil weekly.
CENTERING ROLLER—Remove cover and repack with fiber grease every 6 months.
CABLES AND SPRINGS—Oil weekly, use air motor drain oil.
LOWER DECK DRAIN PLUG—Check monthly, keep filled with SAE 80 gear lube.
LOWER DECK FILL PLUG—Drain, flush and refill every 6 months.
UPPER DECK FILL PLUG—Check monthly. Keep filled with SAE 80 gear lube.
UPPER DECK DRAIN PLUG—Drain, flush, refill every 6 months.
LINKAGE—Grease daily, chassis grease.
AIR STRAINER DRAIN COCK—Open daily, clean sediment trap monthly.
COUPLER—Grease weekly, chassis grease.

Courtesy of the Eimco Corp.

leakage, care should be observed in regard to the amount of lubricant used. In general, the lubricant level should be maintained on a line with the lower part of the axle when the car is at rest.

A highly refined straight mineral engine or car oil of medium to heavy viscosity normally will be best suited to the operating conditions and will insure most complete protection of the bearings. Where service in cold weather is essential the viscosity should be reduced and the oil should have a sufficiently low pour test to insure proper flow through the distributing ports.

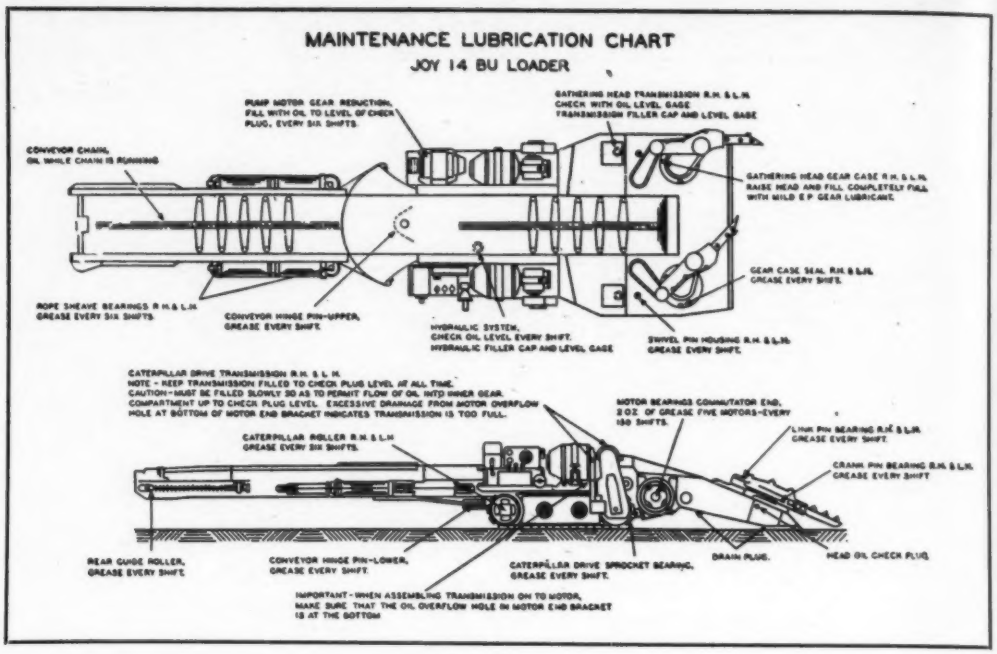

MAINTENANCE LUBRICATION CHART
JOY 14 BU LOADER
PUMP MOTOR GEAR REDUCTION, FILL WITH OIL TO LEVEL OF CHECK PLUG, EVERY SIX SHIFTS.
GATHERING HEAD TRANSMISSION R.H. & L.H. CHECK WITH OIL LEVEL GAGE TRANSMISSION FILLER CAP AND LEVEL GAGE
CONVEYOR CHAIN, OIL WHILE CHAIN IS RUNNING
GATHERING HEAD GEAR CASE R.H. & L.H. RAISE HEAD AND FILL COMPLETELY FILL WITH MILD E.P. GEAR LUBRICANT
GEAR CASE SEAL R.H. & L.H. GREASE EVERY SHIFT.
ROPE SHEAVE BEARINGS R.H. & L.H. GREASE EVERY SIX SHIFTS.
CONVEYOR HINGE PIN-UPPER, GREASE EVERY SHIFT.
HYDRAULIC SYSTEM, CHECK OIL LEVEL EVERY SHIFT. HYDRAULIC FILLER CAP AND LEVEL GAGE
SWIVEL PIN HOUSING R.H. & L.H. GREASE EVERY SHIFT.
CATERPILLAR DRIVE TRANSMISSION R.H. & L.H. NOTE - KEEP TRANSMISSION FILLED TO CHECK PLUG LEVEL AT ALL TIME. CAUTION - MUST BE FILLED SLOWLY SO AS TO PERMIT FLOW OF OIL INTO INNER GEAR COMPARTMENT UP TO CHECK PLUG LEVEL. EXCESSIVE DRAINAGE FROM MOTOR OVERFLOW HOLE AT BOTTOM OF MOTOR END BRACKET INDICATES TRANSMISSION IS TOO FULL.
MOTOR BEARINGS COMMUTATOR END, 2 OZ OF GREASE FIVE MOTORS-EVERY 100 SHIFTS.
CATERPILLAR ROLLER R.H. & L.H. GREASE EVERY SIX SHIFTS.
L.H.M. PIN BEARING R.H. & L.H. GREASE EVERY SHIFT.
CRANK PIN BEARING R.H. & L.H. GREASE EVERY SHIFT
REAR GUIDE ROLLER, GREASE EVERY SHIFT.
CONVEYOR HINGE PIN-LOWER, GREASE EVERY SHIFT.
CATERPILLAR DRIVE SPROCKET BEARING, GREASE EVERY SHIFT.
DRAIN PLUG.
HEAD OIL CHECK PLUG
IMPORTANT - WHEN ASSEMBLING TRANSMISSION ON TO MOTOR, MAKE SURE THAT THE OIL OVERFLOW HOLE IN MOTOR END BRACKET IS AT THE BOTTOM

Fig. 10

It is also perfectly practicable to use a mine car grease where there is possibility of oil leakage. Here again adequate fluidity at low temperatures is advantageous. Wheels designed for grease lubrication are similar to those which are to be served with oil, except that frequently larger ports are used to facilitate passage of grease to the bearings.

Ball and Roller Bearings In mine car wheel ball and roller bearings the protective nature of the seals permits the use of high quality grease for lubrication. By use of properly refined lubricants of maximum lubricating value, the frequency of relubrication can be reduced and the bearing elements more effectively protected. Where low temperature may prevail, the lubricant must be suited to these conditions and capable of functioning without becoming too hard. It is important to remember that the function of the lubricant is dual in that it must not only protect the rolling elements against corrosion, but also lubricate the contact surfaces of the bearing parts.

Soft or semi-fluid greases are best suited for anti-friction mine car bearings. Where the bearings are of ball, cylindrical or tapered construction, a harder grease will be advisable than on hollow flexible bearings. Such a grease will furnish a better cushion between the axle and bearing than a softer grease. Furthermore, it will also form a better seal against possible entry of dust, dirt or water, provided the bearing itself is equipped with a reasonably tight seal. Lubrication of flexible roller bearings, however, can be best accomplished with a semi-fluid or so-called liquid grease. The usual construction of such bearings provides for the hollow spaces within the rollers serving as grease reservoirs. In consequence, the lubricant must be sufficiently fluid to pass through and penetrate to all the surfaces of contact. It should never channel around the rollers, or tend to gum, otherwise protection of the bearings will be seriously impaired.

In all underground work wheel bearing seals are most important for when properly installed and of suitable design they keep out slime, dirt and water effectually, and give better protection to both the bearings and the lubricant. Most mine floors are at least damp—some are wet—and coal slopes are sometimes unlevel which causes water pools to accumulate sometimes deep enough to cover the mine car wheel axles. Drainage adds another complication as it may wash coal dust or rock dust into some types of bearings unless seals are tight.

MINE LOCOMOTIVES

Mine locomotives are generally operated by electric power or compressed air. Electric locomotives can be built more compactly but the overall installation may be more expensive due to the cost of the power transmission system. Compressed air locomotives require only the track system but the units are heavier and more bulky and require special high pressure air compressor installations.

Mine locomotives operate under much the same conditions as do mine cars. Their lubrication requirements are, therefore, similar to other underground mining machinery. Axle

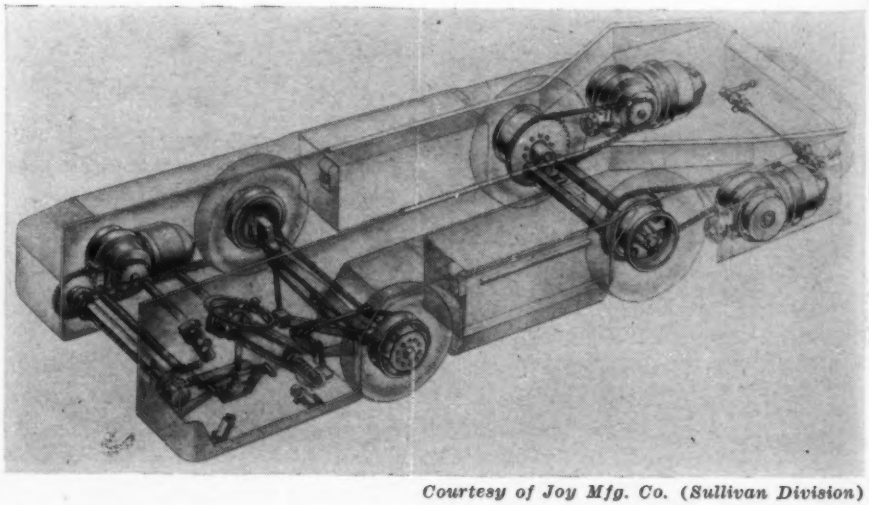
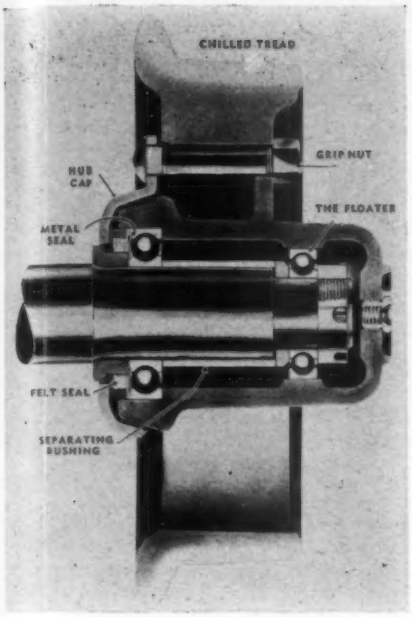


Fig. 11. The mechanism of the Joy 42-D shuttle car which is completely equipped for pressure grease lubrication.

Courtesy of Joy Mfg. Co. (Sullivan Division)



Courtesy of Sanford-Day Iron Wks.
Fig. 12. Details of the Sanford-Day floater ball bearing mine car wheel.

bearings are lubricated according to the type of bearing.

Gears, in turn, require the use of specially prepared gear lubricant of sufficient body or consistency to enable it to adhere tenaciously to the gear teeth and overcome vibration and wear. Where gears are enclosed in oil-tight housings, a light bodied lubricant may be used to advantage, in order to assure reduction in drag and power consumption.

WIRE ROPE ON MINE HOISTS

The mine hoist became more and more important as deeper shafts and the working of lower levels was adopted. Some of these operations require thousands of feet of wire rope, comparable to elevator service in a modern office building, although quite naturally the service is much more rugged due to possible contact with water, acids, dirt and falling rock.

Effective lubrication insures against premature wear, it retards corrosion and prolongs the life of the rope. To perform these functions most effectively the lubricant must not only prevent friction between the strands which comprise the rope, especially when the latter is bent in passing over sheaves or hoisting drums, but also it must prevent entry of water, acids or dirt which would cause corrosion or abrasion.

Lubricant Characteristics A wire rope lubricant must penetrate between the strands and yet stick tenaciously to the contact surfaces. In addition to these properties, the product must not cake, gum or ball-up if contaminated with an excess of dust, dirt, or metallic particles. It must also be retained on the strands even at high temperature; this directly involves the nature of the lubricant as well as relative fluidity. Viscosity, while important from the standpoint of ease of application, should not be regarded as an indication of lubricating ability; penetration and adhesiveness are far more important.

The viscosity of a wire rope lubricant for mine service will range generally from 500 to 1200 seconds Sayboldt Universal at 210 degrees F., according to the operating temperature and the intensity of the moisture conditions. The heavier grades are preferred for warm conditions where there might be possibility of a lighter lubricant thinning down to the extent of dripping off. Conversely, under relatively cold conditions, a lighter lubricant should be used.

Application of Wire Rope Lubricants High viscosity or semi-fluid wire rope lubricants, by virtue of their inertness should be applied in heated condition. Merely to daub or paint a rope with such a product at normal temperatures would be relatively ineffectual. Even though the surface might be more or less coated, the possibility of penetration occurring to any extent would be remote. This latter is the secret of effective wire rope lubrication.

CONCLUSION

This discussion of mechanized mining and the lubrication of the machinery involved is presented to emphasize the relation of lubrication to power consumption and dependable production. Obviously, an organized lubrication procedure, where the lubrication engineer is the predominating factor, is the basis. The machinery involved is costly and many of the parts are precision built. The output of the mine depends upon synchronized operation of all this machinery with production-line efficiency. The lubrication engineer assures of this by advising in the selection of lubricants and by seeing that they are properly protected in storage and carefully applied.

Carney Co. Expands

(*From page* 75)

vibrating screen and loaded into cars for the cement plant. Minus 3-in. is conveyed to a 36- by 42-in. Dixie pulverizer for processing into agricultural limestone, or it can be routed to a Diamond Model 65 portable plant for processing into various sizes of road stone. This plant, which incorporates a 10- by 36-in. jaw crusher, is driven by a 120-hp. Buda diesel engine. The agstone and road stone products are dropped into a pit and reclaimed with a 2-yd. stiff-leg clamshell. The Lundien Construction Co. of Mankato has the contract for secondary crushing and hauling. Two Baughman spreaders are used for agstone deliveries.

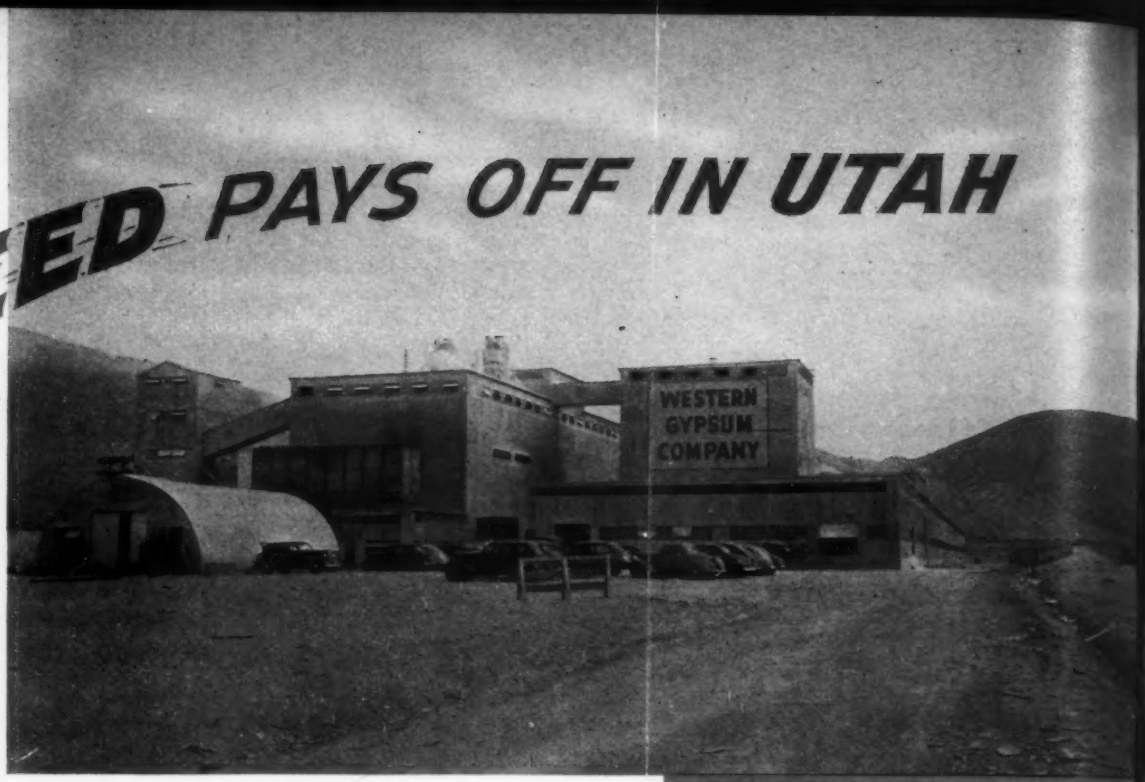
The original unit of Carney industries, a plant for the manufacture of hydraulic cement, was established in 1883 by P. H. Carney, pioneer Mankato industrialist. His son, Harry E. Carney Sr., as executive head of the company, developed and expanded the enterprises until his death in 1938. Harry E. Carney Jr., grandson of the founder, is now president of the company. He is also head of the recently organized Carney-Pacific Rockwool Company, which operates a new $250,000 mineral wool plant at Longview, Wash. This plant just recently got into production. Simpson Industries, the selling division of the Simpson Logging Co., has the exclusive sales agency for Carney-Pacific Rockwool.

Carney has completed within the past year a major expansion and improvement program involving the cement mill at Mankato. The construction of three additional lime processing silos has doubled capacity by making it possible to operate existing grinding equipment 14 to 16 hrs. per day, as against 8 formerly. The silos are of concrete stave construction and each has a capacity of 2,000 bbls. During the shutdown the company also installed new coal-handling hoppers, repaired stone gondolas, relined and repaired its kilns, and overhauled all major mill equipment. These improvements have increased output of all cement products to about 2,000 bbls. per day.

On capacity operations Carney employs about 145 men at Mankato, including 15 in the quarry and stone plant, 35 at the cement plant, and the remainder in the rock wool division. Only the rock wool plant operates on a 3-shift basis.

Expenditure on American cement-making machinery valued at nearly $3,200,000 was recently defended by Prime Minister Joseph B. Chifley of Australia. He told the House of Representatives that the government always gave earnest consideration to applications to buy machinery that would ultimately save dollars.

SPEED PAYS OFF IN UTAH



Western Gypsum Company's New and Completely Modern Plant Built and Put Into Production In Record-Breaking Time

Above: General view of Western Gypsum Company's new plant in Sigurd, Utah.

Below: The board machine, seen here from bridge, is over 500 ft. in length. Stacked board is at left.

another ON THE SPOT report

FROM preliminary sketch stage to actual production in the amazingly short span of 11 months is the record achieved by the country's newest gypsum producer, the Western Gypsum Co. of Salt Lake City, at its new and modern plant in Sigurd, Utah.

Actually, the period of erection covered but 8 months, since the first concrete footings were not poured until August, 1947, and initial output was attained in April, 1948.

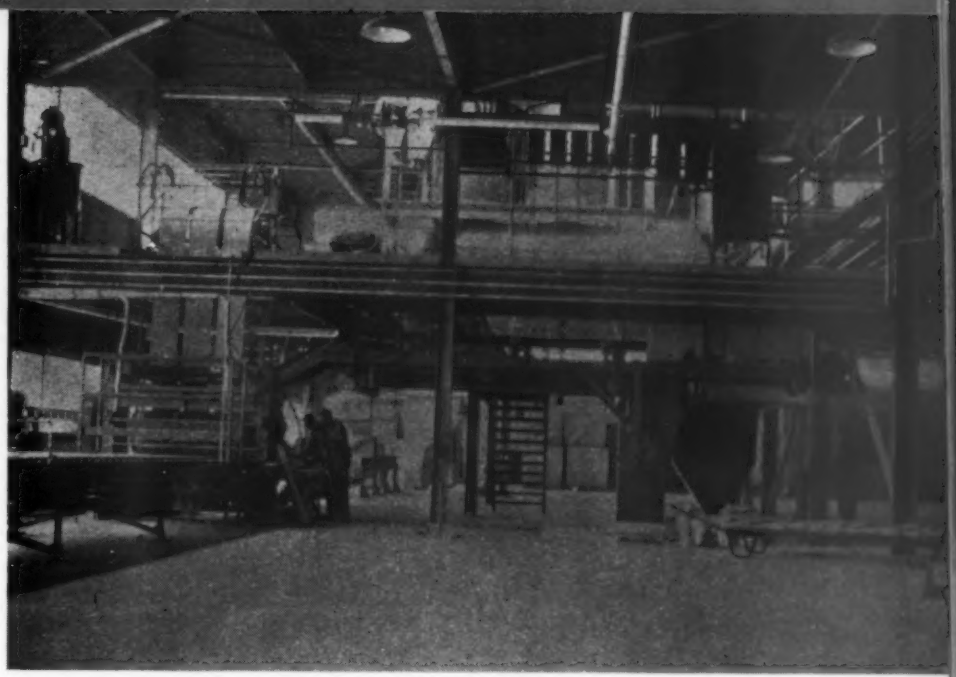
By HARRY F. UTLEY

The ability to provide a full line of critically needed gypsum products for the building trades is a tribute to the officials of the Western Gypsum Co., a group of energetic individuals of wide experience and "know-how" in the gypsum industry. Sid H. Eliason, president, served the industry in various sales capacities in the West for 20 years prior to the organization of the new company; R. D. Hess, vice-president in charge of production, had a 20-year record of efficient production management in the Iowa gypsum field; E. L. Hildebrand, vice-president, spent 18 years in the administrative end of the industry before helping to form the new concern; while W. S. Mole, secretary-treasurer, had devoted a decade to the merchandising of gypsum products.

The new Sigurd plant was designed by the consulting-engineering firm of Johnson & Johnson, Conway Bldg., Chicago; and the Jacobsen Construction Co. of Salt Lake City

was the general contractor. All buildings are of steel-frame construction, having corrugated siding and metal roofs, with concrete floors throughout. There are five separate structures, the board plant being the largest. It is 720 ft. long, 100 ft. in maximum width, and 40 ft. high to the eaves.

The deposit, located in the foothills of the towering Wasatch Mountain range, 3 miles east of the plant, is said to be one of the purest and whitest on the North American Continent, running at least 98 percent pure gypsum. It is several thousand acres in extent and was acquired from the old American Keene & Cement Plaster Co. of Salt Lake City, which had operated a small Keene cement plant at Sigurd for a number of years. This in itself is an indication of the quality of the deposit, as raw materials for Keene cement must be of exceptional purity and whiteness. Only two other commercial deposits of such high quality exist in the United States to provide Keene cement rock—one in southern Okla., and another at Medicine Lodge, Kan.



Inside view of plant. Forming-roll end of board machine is to the left, mixing equipment on mezzanine, and paper roll storage is in background.

Keene cement production is, incidentally, being continued by the new company, utilizing the old American plant, which is being modernized and which adjoins the new gypsum plant. Such rock is hand selected for quality and size at the quarry and the head- and man-size pieces are packed into two beehive kilns and dead-burned for several days. The 200-ton charges lose 25 to 30 percent of their original weight in combined moisture during the firing, which is done with coal; after crushing and grinding in buhr mills, the product is mixed with an accelerator and packed in valve-type bags for shipment.

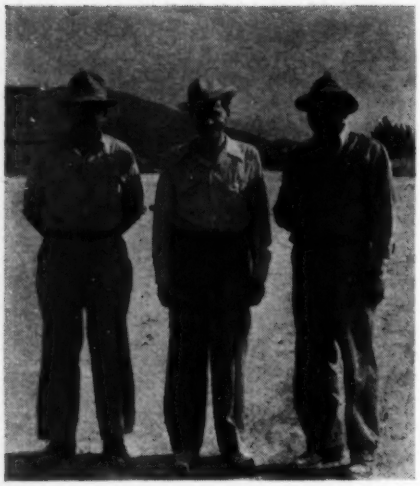
The deposit is being worked as an open quarry and the face is now being benched on 25- or 30-ft. levels. Overburden, varying from 6 in. to 10 ft., is stripped by dozing. Wagon drills and jackhammers are used and blasts are detonated about once a week, bringing down about 5,000 tons of well-fragmented, relatively soft material.

Two diesel-powered shovels, a Marion 1½-cu. yd. and a Bucyrus-Erie ¾-cu. yd. machine, load the rock into three Euclid 18-ton-capacity end-dump quarry trucks. The elevation at the quarry is about 300 ft. higher than at the plant, but the down-grade is only about 1 percent, just about right to run the loaded trucks down to the plant with good fuel economy.

At the gypsum plant, the trucks back up an earthen ramp and dump into a steel hopper fitted with a Pioneer apron feeder in the bottom, which puts the raw gypsum into a Pioneer 30- by 42-in. jaw crusher. The product of the primary is con-

Top: View looking down on the board machine. At the right is the dryer.

Bottom: Transfer table at end of board machine and feed end of the 300-ft. dryer.



Above: Left to right: R. D. Hess, vice-president in charge of production; E. L. Hildebrand, vice-president; and A. H. Brunner, chief engineer.
Center: Quarry truck dumping hand-picked stone for charging the two beehive ovens which dead-burn the stone for Keene's cement manufacture.
Bottom: One of the trucks discharging to the primary jaw crusher feed hopper.

veyed in the crusher house for secondary reduction in a Jeffrey 42- by 48-in. swing hammermill, a Bonded Scale 4- by 10-ft. double-deck screen being in closed circuit for bypassing the fine material and returning the plus 1½-in. rock for further reduction. Facilities are optionally provided for the carloading of retarder rock for shipment to portland cement plants. The screened product is conveyed to two cylindrical steel conical-bottom surge bins of 225-ton capacity, each of which feeds a pair of Raymond No. 5448 low-side kiln mills provided with air separation and supplied with drying air by a separate oil-fired furnace and fan.

The mill product, known to the trade at this stage as "land plaster," can pass by screw conveyor to the bins above a St. Regis 2-tube packer for bagging as agricultural gypsum, or to the kettle-feed bins.

Calcination of the gypsum takes place in three Ehrsam 15-ton kettles of the latest type. (Two units were initially installed, and the third is just now being completed.) These are steel-jacketed, coal-fired units with forged-steel bottoms, 10- by 10-ft. in size with 2-ft. top extensions. Calcination is completed in 2-hr. cycles, the kettles being equipped with new type Ehrsam self-emptying insulated hot pits which receive the batches after calcination.

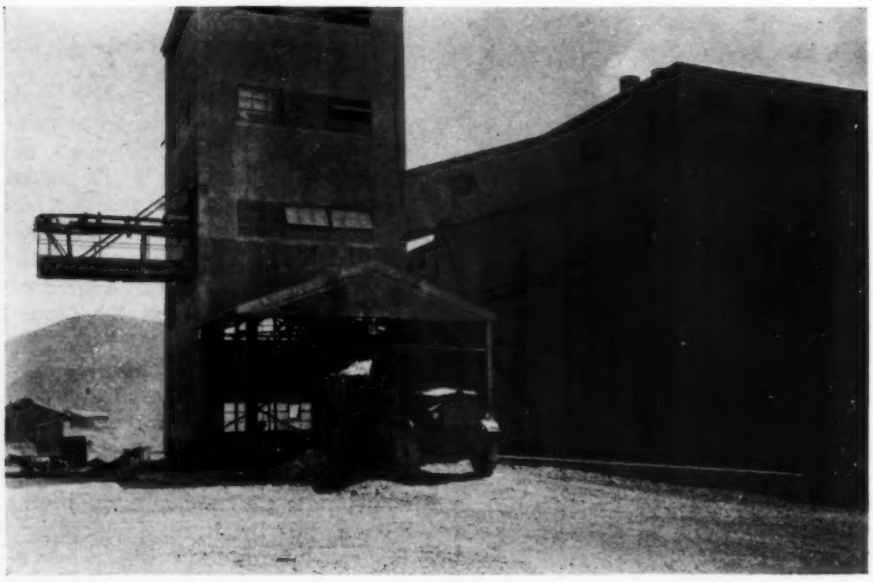
Raymond dust collectors are employed on the kettles, being located in an enclosed "hot room" which utilizes waste heat from the kettles to dry the dust. Draft is induced by fans to handle the moist and dusty gases, discharge into the atmosphere being via a short stack.

From the hot pits the calcined gypsum ("stucco," in trade parlance) is carried by screw conveyor and elevator to the top of the mill building for distribution to the bins supplying the various finished plaster departments. It may be routed to the packers direct, if desired, without tube-milling; it can go to the tube-mill feed bins or to the board plant, having previously passed a rotary screen for the removal or disintegration of lumps.

The Western plant mixes and produces a wide variety of plasters, including "white goods"—dental, orthopedic and pottery plasters. The various products are packed by several St. Regis valve-type baggers at the plant under the company's "Pure-Wite" brand.

The specialties are low-consistency plasters and for these the stucco is reground in a 36-in. Ehrham buhr mill. Base-coat and hard-wall plasters require a higher consistency and greater plasticity than do the specialty goods, and for this output the stucco is reground to the desired fineness in an F. L. Smidth 6- by 20-ft. tube-mill driven by a 200-hp. motor. After tube-milling, the product is elevated to four bins over the weigh-batchers and mixers, where the sisal fibers and commercial retarders are added before the product is packed in 100-lb. paper bags.

For board manufacture, the stucco goes direct from the hot pits by way of a 12-in. screw conveyor 135 ft. long to the top floor at the feed end of the board plant, discharging into two cylindrical double-conical-bottom, 200-ton steel bins. Uniform feed from the bins is attained by the use of a drag-chain conveyor and the various additives are introduced into the board mix-



The two kiln-mills and air-separator piping. Hot-air furnace is at right.

tures by three Omega disc feeders.

The board mix is delivered to the board machine by Ehrsam equipment. Wallboard, sheathing and lath are produced on the Ehrsam board machine, which is over 500 ft. long and said to be one of the longest ever manufactured. It consists of three separate belt assemblies, and the speed of board travel is controlled to a nicety by a Westinghouse SynchroTie system. The speed and acceleration of each belt section, the lath punch and the cut-off knife are automatically governed by this system. Operation is in the conventional manner, backing and facing paper feeding into the belt ahead of the deposition of slurry, edges being overlapped and sealed automatically.

The cut-off knife is of the latest Ehrsam rotary design for extreme accuracy in controlling the length of cut. To facilitate handling and speed-up operations, board products may be cut either to individual lengths, or both cut and perforated in longer lengths in 4 ft. or 8 ft. multiples. The sections are separated into required lengths later by a special breaker device as they come off the dryer.

Paper is purchased from the Central Fibre Products Co., newsline and lath stock comes from the Denver mill and ivory facings from Central's plant at Hutchinson, Kan.

Coming off the board machine, the lath or board is carried over to the Coe 300-ft. dryer by a standard Coe 24-ft. live-roll transfer table.

The eight-deck, double-width triple-zone dryer parallels the board machine, and the feed to the decks is accomplished automatically by an electric-eye-controlled elevator. Steam coils through the length of the enclosed section cure and dehydrate the board during its passage through the unit. Pipe fittings were eliminated entirely in the maze of steam coils by welding all joints in the piping to insure against any possible loss of steam. Steam pressure is held constant at 200 lbs. and there is automatic high-pressure condensate return to the boiler. Approximately 5 tons of water per hr. is driven out of the board during the drying operation. The board rides over nearly 3,000 ball-bearing rollers in the Coe dryer; and approximately 6,000 ft. of transmission chains is used in the unit.

As the finished board products emerge from the cooling section of the dryer, they are inspected, stacked and bundled. A Coe Style W clipper is used to re-cut boards,

Two of the three calcining kettles.

to produce box-car dunnage, or to cut up samples for the trade.

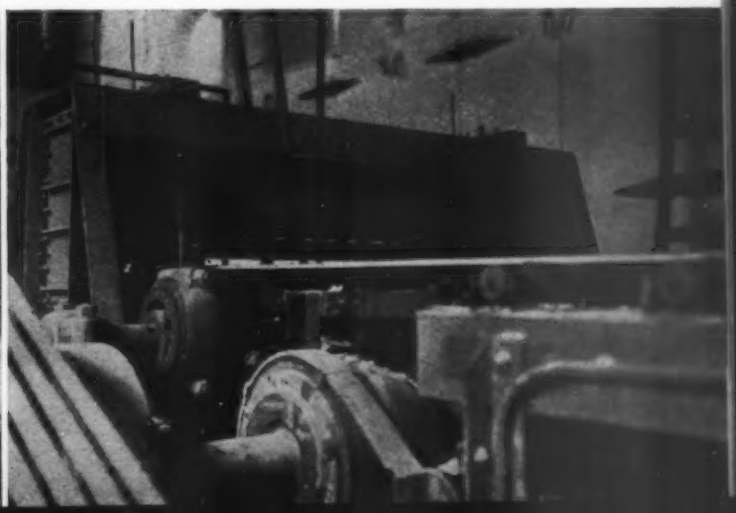
The boiler-house is a separate structure and houses a Babcock & Wilcox boiler developing about 1,000 hp. It is fired by a triple installation of Combustion Engineering stokers. A good grade of Utah bituminous coal is used, coming from a mine only about 15 miles distant from the plant.

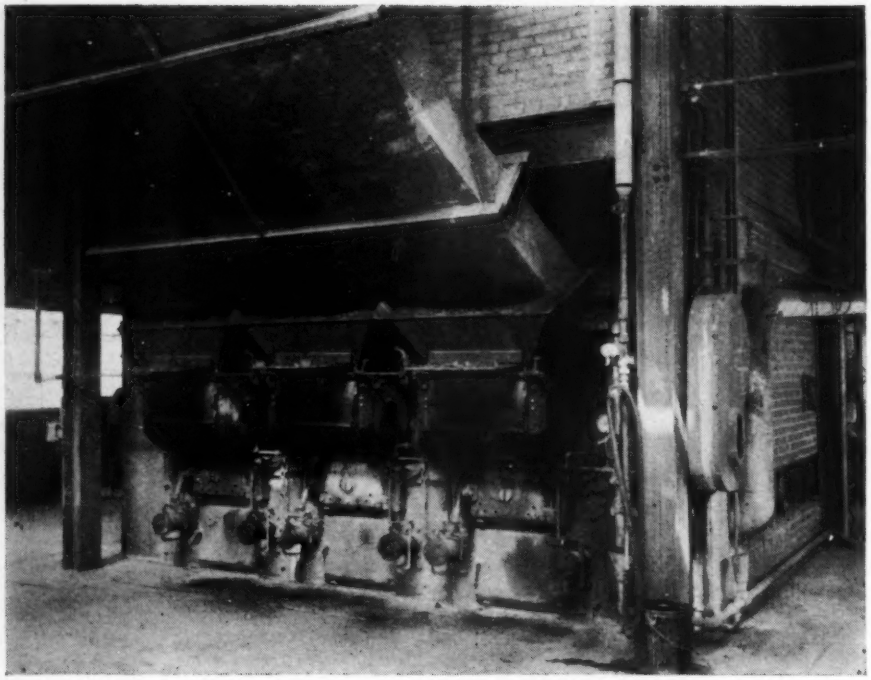
Two Automatic 5-ton industrial platform trucks, powered by Edison storage batteries, are used to handle the pallet-loads of board in and out of the storage area, which is on the same ground floor in the board plant, and for loading the box cars. An Automatic 2-ton forklift-truck is in service for handling the rolls of paper.

All equipment is driven by individual electric motors and speed reducers, practically all of these being Westinghouse "Iron-Clad" units. Crocker-Wheeler motors are

The 6- by 20-ft. tube-mill which grinds stucco for plaster.

The lath punch over the board machine.





Three automatic stokers fire the 1,000-hp. boiler which generates steam for the dryer.

used in the Coe dryer. Connected horsepower totals about 2,000 and power is generated on the premises in a well-designed and well-maintained power plant adjoining the mill building. Prime movers consist of G.M. 16-cylinder diesel engines, direct connected to G.E. 2,300-volt a.-c. generators. Allis-Chalmers indoor-type transformers step the potential down to the 440 voltage used on the motors.

The Sigurd plant is served by the Denver & Rio Grande Western Railroad and three loading tracks are so arranged between the board mill, plaster mill, and crushing buildings that either straight or mixed cars may be loaded as desired without the necessity of switching.

Plant management is the responsibility of Mr. Hess, with the able assistance of A. H. Brunner, chief engineer. Mr. Brunner, like the company officals mentioned earlier, is a seasoned gypsum operator and has designed complete gypsum plants. Quality of product is under the supervision of Chemist Ray Cox. E. J. Gutknecht, a veteran with 23 years' experience in gypsum-board manufacture, is superintendent of the board plant.

Main offices of the Western Gypsum Co. are located in the Dooly Bldg. in Salt Lake City. The company is marketing its products extensively throughout the Intermountain, Pacific Northwest, and Pacific Coast areas.

Washington News Letter

(*From page* 70)

tial construction, the decline in industrial construction is noteworthy even though it is smaller than had been expected previously. Commercial construction, on the other hand, is expected to increase substantially. Among the various types of public construction, the virtual abandonment of a public housing program is seen in the sizable reduction in public residential construction. Of major importance in the expansion of public construction are the school, hospital and roadbuilding programs.

In connection with the highway program, the Federal-Aid Highway Acts, discussed in the August issue, play an important role. The sums apportioned to the various states from the $450,000,000 fund authorized by the Federal-Aid Highway Act of 1948 have just been announced by the Federal Works Administrator.

Canada Reports on Use of Nonmetallic Minerals in 1946

According to final figures, the production in 1946 by the Canadian manufacturing industries which used nonmetallic minerals as their principal materials amounted to $442,084,682 at factory prices, an increase of 9 percent over the corresponding 1945 value of $405,736,477.

Eleven of the industries in this group showed increases in output values in 1946, as compared with 1945, and four industries showed declines from that year. The percentage gains were as follows: asbestos products, 12.9; cement products, 55.8; cement, 40.9; products from Canadian clays, 37.0; products from imported clays, 32.8; stone products, 74.3; gypsum products, 53.2; lime, 8.8; sand-lime brick, 11.1; petroleum products, 10.8; and the miscellaneous group, 7.3. Output from the artificial abrasives industry was about 0.2 percent less than in 1945; the coke and gas industry was down 15.0 percent; glass, 2.4 percent; and salt, 8.0.

Imports into Canada for nonmetallic minerals and their products totalled $332,611,081 in 1946 as compared with $265,405,010 in 1945. Exports of Canadian produce were appraised at $57,360,525 during 1946, as against $59,555,035 in the previous year.

According to the recently issued report of the Material Service Company, Chicago, Ill., for its operations in the year 1947, net sales for the year ending December 31, 1947, amounted to $22,445,759.08. This was the company's 29th annual report.

NEW CONSTRUCTION ACTIVITY IN 1947 AND 1948
(In Millions of Dollars)

Type of Construction	1947	1948	
		Nov., 1947, Estimate	July, 1948 Estimate
Total new construction	$13,977	$15,200	$18,000
Total private	10,893	11,375	13,850
Residential	5,260	6,000	7,100
Nonresidential	3,131	3,250	3,750
Industrial	1,702	1,350	1,425
Warehouses, office and loft buildings	216	275	375
Stores, restaurants and garages	619	850	1,000
Other	594	775	950
Farm construction	450	500	500
Public utility	2,052	...[1]	2,500
Total public	3,084	3,825	4,150
Residential	182	100	75
Nonresidential	505	850	1,000
Industrial	25	25	25
Educational	275	375	525
Hospital and institutional	81	225	225
Other	124	225	225
Military and naval	204	250	200
Highway	1,233	1,500	1,600
Sewer and water	331	375	450
Miscellaneous public service enterprises	117	125	125
Conservation and development	396	475	550
Other	116	150	150

[1] Not available on same basis.

Ex GI Puts Army Experience To Good Use in Sand-Gravel Business

another ON THE SPOT report

THE resort city of Asheville, N. C., is experiencing a building boom in common with other cities more dependent on commerce. This has created a shortage of sand although crushed stone and coarse and crushed gravel are both produced in this area. The gravel deposits contain only a small percentage of sand. The deficiency is supplied mainly by a number of small sand and gravel plants located along the banks of the picturesque French Broad River.

One of the most progressive producers is Clyde Reed Jr., who operates three such plants adjacent to Biltmore Forest. Mr. Reed graduated from the University of North Carolina in 1936 and in 1937 went into this business in a small way. In September, 1942, he shut down his operations, sold his fleet of trucks and joined the Army. During the next 41 months he saw active service in Europe as a captain of Ordnance. His duties included the supervision of tank repairs, which turned out to be ideal training for the sand and gravel business. When he re-entered his former business after the end of the war, he decided to produce only and do no trucking.

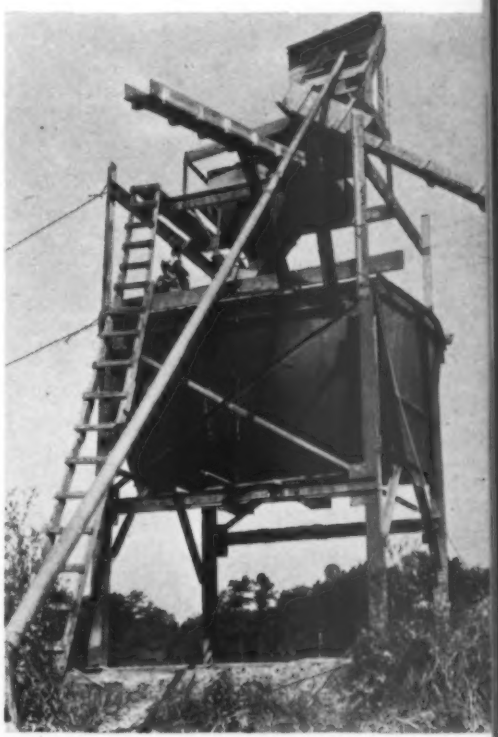
The plants along the French Broad River all get their material from the river bed, where occasional floods and high water replace the worked-out deposits. In the past year, however, the water has been low and operations have had to be extended for a distance of about 1½ mi. up and down the river.

• Scene of marine operation of Clyde Reed Jr., on the French Broad River, near Asheville, N. C. In the foreground is the largest of the dredges.

The newest of the three Reed plants is a dredging operation with a capacity of about 140 cu. yd. in a 10-hr. day. The dredge is a homemade affair with a steel framework mounted on thirty 50-gal. oil drums. The 20-ft. intake for the pump consists of Goodyear suction hose and a 4-ft. section of pipe, and is operated by a hand winch from a small stiff-leg. The 4-in. Erie pump is driven by a 40-hp. Allis-Chalmers U40 engine, which can burn either gasoline or kerosene. The pump discharge is connected to a line of 4-in. flanged and bolted black iron pipe supported on oil drums, with occasional rubber hose sections for flexibility.

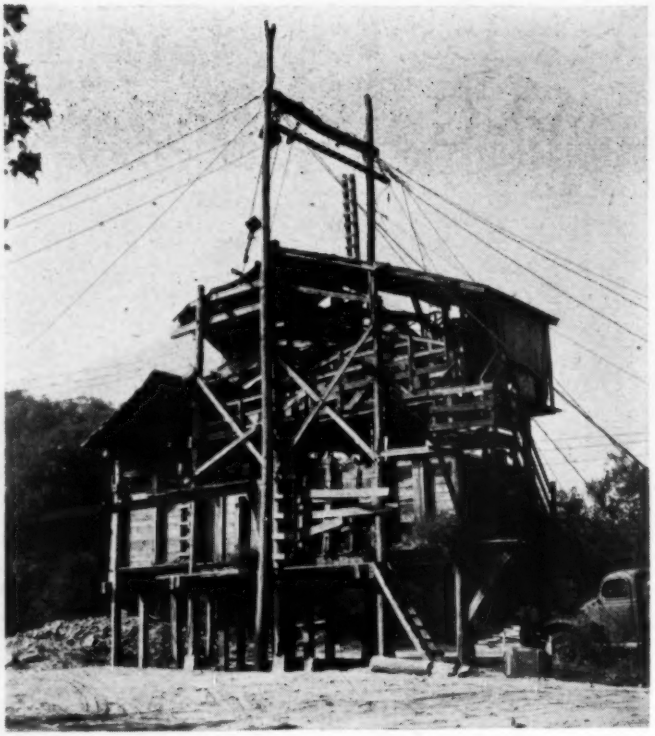
This pipeline is extended up to about 200 ft. and discharges at about 40 ft. above river level to the top of the shore plant. The flow is discharged against an inclined stationary wire cloth screen with .170-in. openings. Oversize goes to a pile alongside the plant and is sold for driveways, etc. The material passing through the screen goes to an Eagle No. 35 settling tank which removes trash and water. The product is masonry sand and goes into a 40-cu. yd. steel bin. Standard practice is to fill the bin and then shut down digging operations while the sand drains and is then loaded into trucks.

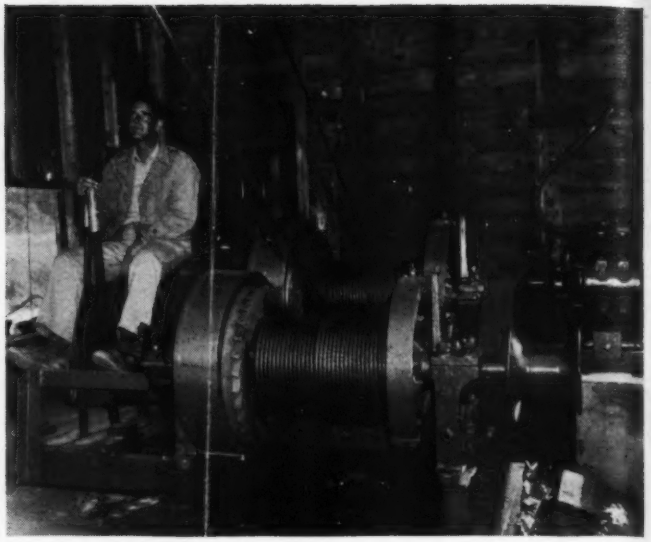
The largest of the three plants is also a dredging operation, with



• Left: Mr. Reed standing before the largest of the three Reed plants. Note sand tank above.

• Right: The newest plant, with sand tank above the 140-cu. yd. bin.





• Left: Original plant, with cableway, grizzly and hopper in the superstructure.
• Right: Mr. Reed at the controls of the scraper hoist at the oldest plant.

a capacity of 300 cu. yd. daily; it is located farther upstream. The dredge is similar except that it has a 6-in. Erie pump driven by a 65-hp. G.M.C. diesel engine.

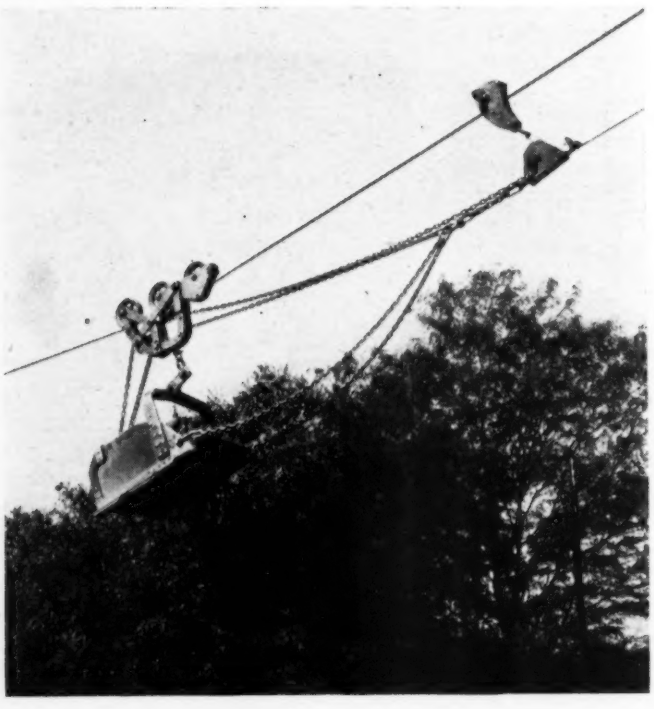
This pump is designed for a maximum total head of 50 ft. but actually produces at the rate of 45 cu. yd. per hr. pumping through a 340 ft. line to a height of 55 ft., an actual total head of 90 ft. The pipeline discharges into a box with a stationary screen having 3/8-in. openings. An Eagle No. 45 tank is used and the concrete sand product goes into a 130-cu. yd. bin. The local ready-mixed concrete firm of Reed and Abee buys most of this sand.

The old original plant is a dragline operation with a capacity of 225 cu. yd. daily. Material is recovered from the river with a Sauerman 1-cu. yd. slackline cableway excavator. This has a 400-ft. span and is anchored to a deadman on the opposite bank of the river. A home-made bucket is used. The 1¼-in. track line and the ¾-in. load line are both Broderick & Bascom "Yellow Strand" preformed wire rope. The bucket dumps over a 6-in. sloping rail grizzly into a hopper. An Eagle screw washer effects some preliminary cleaning before the material is discharged on a 3- by 6-ft. Simplicity 3-deck screen. This has perforated pipe sprays and 5/8- and .170-in. openings on the two decks being used. The plus 5/8-in. gravel and medium sand produced are stored in a 3-compartment, 100-cu. yd. bin.

Mr. Reed has standardized on Fiske Lubriplate where a water-resistant general-purpose grease is desired. No. 130AA is used on the screens and the bucket carriers, etc., and No. 110 on the screw washers and the hoist. Texaco "Crater" compound is used on open gears. The engines use Gulf gasoline and oil. Fuel costs, according to Mr. Reed, are less than ½ cent per cu. yd. of sand produced.

All welding and repair work is done on the job using an A. O. Smith a.-c. welder. Stoody hard-surfacing rods and Westinghouse mild steel rods are used, a total of about 50 lb. annually. Among the items on which hard surfacing is done are the pump impellers and shells and the bucket tips and bottom runners.

• The 1-cu. yd. bucket has a working span of 400 feet.

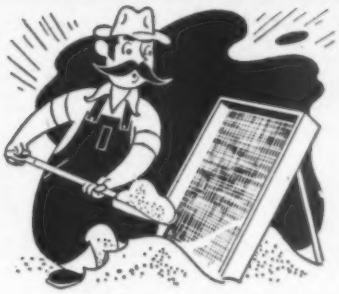


Ancient Skeleton in Green Sand Identified by Scientists

Green sand, commonly used as a fertilizer in the Sewell, N. J., area, recently yielded a startling find—the skeleton of a hadrosaurus—duck-billed dinosaur to most of us. It was at the site of the facilities of Hungerford & Terry Inc., that workmen exposed a 60,000,000-year-old "drumstick" while recovering green sand, which the firm uses as a water-softening medium.

Having previously uncovered fossilized remains of crocodile and other prehistoric creatures, the workmen had been alerted to watch for similar skeletons. Scientists were called in and the identity of the 2-ton vegetarian was established. Officials of Hungerford & Terry presented the fossil find—it was dug out in 275 pieces—to the Philadelphia Academy of Natural Sciences.

Screenings



by William M. Avery

FOR some months now we've been carrying on a desultory investigation to determine what effect, if any, the impact of the atomic age will have on the pit and quarry industries. On the whole the picture isn't too glum, unless you subscribe to the notion that one of the first items on the agenda will be the complete liquidation of our species.

Purely from a business standpoint, our industries seem to be rather favorably situated. As more and more atomic ovens go into operation, disposing of large quantities of radioactive waste will become an increasingly serious problem. One

solution under consideration is to seal the radioactive atoms in concrete cylinders and drop the whole mess into the ocean. Inevitably, of course, a few pessimists have pointed out that in a century or so the cylinders might break open, pollute the sea and eventually cause radioactive rains. Maybe the concrete industry will have to furnish cylinders on a "satisfaction guaranteed or money cheerfully refunded" basis.

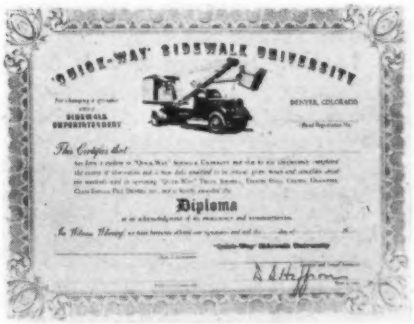
Another brisk market for building materials is indicated by a recent mishap in which researchers in a single afternoon so badly infected the walls of a laboratory that they had to be taken down and replaced. Maybe concrete block salesmen in the future will use Geiger counters to run down new business.

In the shelter market, too, concrete seems to have a clear track, although to date there doesn't seem to be much activity in this department. About a year ago the Chicago *Tribune* made a good deal of noise about a concrete atomic bomb shelter for its employees, apparently in preparation for the traditional "We told you so!" reaction whenever the bombs start falling. Anyway, it's reassuring to know that even after the rest of the population has been wiped out, the *Tribune* will go right on preaching isolationism.

If you're still inclined to be despondent, maybe *this* will cheer you up. A year after the bombs were dropped on Bikini Atoll scientists found 14 species of ants conducting their affairs just as though nothing had happened. Several kinds of spiders, scorpions, centipedes and millipedes were also prospering. Evidently old Ma Nature, at least, isn't afraid of the big bad bomb.

Higher Larnin'

AT LAST sidewalk superintendents are receiving some sort of formal recognition. A Denver truck-shovel manufacturer now supplies its distributors and users with


"QUICK-WAY" SIDEWALK UNIVERSITY

DENVER, COLORADO

Diploma

Sidewalk University diplomas which are issued to sidewalk superintendents "as an acknowledgment of their proficiency and hindsightedness." The recipient of the diploma is qualified "to be critical, gripe, moan and complain about the methods used in operating truck shovels, trench hoes, cranes, draglines, clam shells, pile drivers, etc."

We're not even sure there's anything essentially frivolous about the idea. It's certainly based on much sounder premises than most of the honorary law degrees that institutions of higher learning hand out by the boatload. The average recipient of an honorary degree probably gave up his schooling in disgust after seven tries at the fourth grade, whereas even the most casual sidewalk superintendent persists in his studies just as long as he's able to navigate.

We'd Batter Quit, Now

OVER a period of some months we've had a run on items involving the use of concrete mixers for purposes other than mixing concrete. We're pretty well fed up with the whole business, but just in case our seventeen loyal readers aren't, here's another. A concrete mixer was employed to mix batter

for 30,000 pancakes served at a Boy Scout council gathering near Chicago the other day. That ends the subject as far as we're concerned, so help us!

Nomenclature

WE SUPPOSE some irresistible mutual attraction must have caused a chap named Akin to form a partnership with a fellow named Payne to produce agricultural limestone at Independence, Iowa. Yep! They call the outfit Akin & Payne. Then there's a guy named Alingh who has a cast stone business over in Sioux City. Wonder if the three ever get together to swap symptoms?

Left: Final sizing is handled with this battery of covered vibrating screens. Minus 200-mesh is collected in a cyclone separator and pumped back into the Mississippi as waste.
Right: A 6-cu. yd. dump truck unloads over a homemade belt feeder which charges a 15- by 36-in. jaw crusher.

Silica Sand

(*From page* 72)

which controls, through a friction clutch, the rate of feed to a 15- by 36-in. Cedarapids jaw crusher. Sand from the primary breaker is elevated by belt and split into two streams over two 4- by 12-ft. Tyler Ty-Rock double-deck screens fitted with ⅝-in. cloth on the top decks and ⅛-in. cloth on the bottom. Oversize off the top deck goes to a 20- by 40-in. Pioneer roll crusher on one side of the screen, while sand vibrated off the ⅛-in. deck is chuted to a Cedarapids 24- by 40-in. roll crusher on the other side. Recrushed material from both crushers is fed back to the Ty-Rock screens.

The material passing through the bottom deck goes down a 45-ft. chute into a 90-ton Des Moines Steel Co. surge bin, located halfway between ground level and the mine entrance.

Approximately 50 tons of sand per hour, regulated by a 24-in. flat belt feeder, are drawn off from the surge bin to gravity charge the Hardinge Class "XH" rotary dryer. The dryer measures 90 in. in diameter by 60 ft. in length and in a single-shell, direct-heat type, with feed entering at the furnace end. An arrangement of baffles, welded to the outer shell in flights spaced at 18-in. intervals, lifts and agitates the sand and, at the same time, deflects the flow of hot gases against the freshly exposed surfaces of the sand. The moisture content of the sand entering the furnace varies between 3 and 4 percent while the moisture leaving the furnace has been reduced to less than 1 percent, usually ranging between ½ and 1 percent.

The heat is generated in a separate Ray oil-burning furnace connected to the stationary feed head by means of a refractory-lined flue. The No. 3 fuel oil, stored in two 10,000-gal. tanks, is pumped to the combustion chamber under 30 lbs. of pressure. Temperature at the hot end ranges between 1800 and 2200 deg. F.

The dried silica sand (50 tons per hour) is discharged through a stationary discharge head. Both the gases and some of the fine sand are drawn through the shell by means of a slow-speed induced draft fan. To prevent excessive wear upon the fan blades, a cyclone air separator is placed between the dryer head and the fan. No attempt is made to salvage these fines.

The moisture-free product from the dryer is lifted 45 ft. on enclosed bucket elevators to an 11-ton surge bin and distributed over four Tyler Hum-Mer 4- by 10-in. single-deck covered vibrating screens, fitted with 26-mesh cloth. Oversize is chuted to an 18- by 30-in. Cedarapids roll crushed for further reduction and back again on bucket elevators to the covered screens.

Two 1200-ton silos purchased from the government as surplus equipment provide ample storage facilities. At the present time all sand is shipped by rail although it is contemplated that in the future barge transportation on the Mississippi will be brought into play.

Eleven persons, under the supervision of Dean Jones, man the plant. As the need arises, additional labor will be employed in order to work the plant every day instead of on alternate days, as is done at present.

Bulletin Issued on Methods Of Testing Mineral Wool

As a part of an investigation of domestic sources of raw materials suitable for the production of mineral wool to supply increased demands of the building trades, the U. S. Bureau of Mines has issued a publication describing laboratory testing methods for evaluating the physical properties of mineral wool.

Commercial standards for industrial mineral wools, established by the Industrial Mineral Wool Institute in cooperation with the National Bureau of Standards, relate to various physical properties. These include fire resistance, moisture adsorption, odor emission, shot content, temperature resistance, and thermal conductivity. In addition to these standards, some mineral-wool manufacturers consider density and fiber size.

To establish a testing procedure, a wool-blowing furnace was constructed at the Bureau's Mississippi Valley Experiment Station at Rolla, Mo. The report, prepared by S. M. Molloy and W. A. Calhoun, metallurgists at this station, discusses only the percent shot, density, and fiber size of mineral wool.

A free copy of the publication, Report of Investigations 4296, *Laboratory Methods for Evaluating Materials for Mineral-Wool Production,* may be obtained by writing to the Bureau of Mines, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa.

Pollution Bill Rejected As Obstruction to Industry

After warnings that the proposed legislation would threaten the state's industries, including gravel pit operators, the Louisiana Senate recently defeated, by a vote of 28 to 5, a bill to impose more stringent penalties for pollution of streams. Opposition speakers included Senator Rudolph Easterly, who declared that the bill would endanger the operators of gravel pits in his district.

As introduced by Senator Puckett Willis, the bill would have set penalties up to $5,000 a day for violation of its terms.

Lime Production and Consumption Increases in Mexico

By SANTIAGO SOTO M.

Many New Plants and Expansions Expected To Multiply Output

MEXICO, like all Latin American countries, and countries of Spanish descent, is a great producer and consumer of lime. Up to the middle thirties, practically all of the lime consumed in Mexico was in the form of unslaked lime, practically the same being the case throughout Latin America. At this time the Riefkohl brothers, Ings. Luis and Alejandro Riefkohl, introduced hydrated lime, not without some difficulty, into the construction market in Mexico. Since then the use of hydrated lime has become general, especially in the Federal District, and larger cities.

The lime industry in Mexico is, at this time, going through a revolutionary period in that the largest lime producers, who up to this time have burned their lime in homemade vertical kilns, are going over to rotary kilns, which it is naturally expected will give them better-calcined lime, and will give them also chemical lime, and a much better and lower cost production all around.

Federal District The three main lime producers at present, in the order of their importance in the Federal District, are: Calidra, S. A., Piracal, S. A., Beneficiadora de Cal, S. A.

These three parties combined are probably producing from 500 to 600 tons of hydrated lime in 24 hours. Of this lime, and this applies also to the production of small producers, about 95 percent goes into construction purposes, and the other 5 percent into industry, chiefly chemical.

Of the lime produced by the parties mentioned, and others in the Federal District, probably 80 percent is consumed in the Federal District itself, and 20 percent is shipped to outlying states.

Aside from the above producers, there are probably ten to twenty small producers, producing anywhere from 25 to 50 and 75 tons a day; most of these small producers do not have hydrating plants, but sell their lime unslaked.

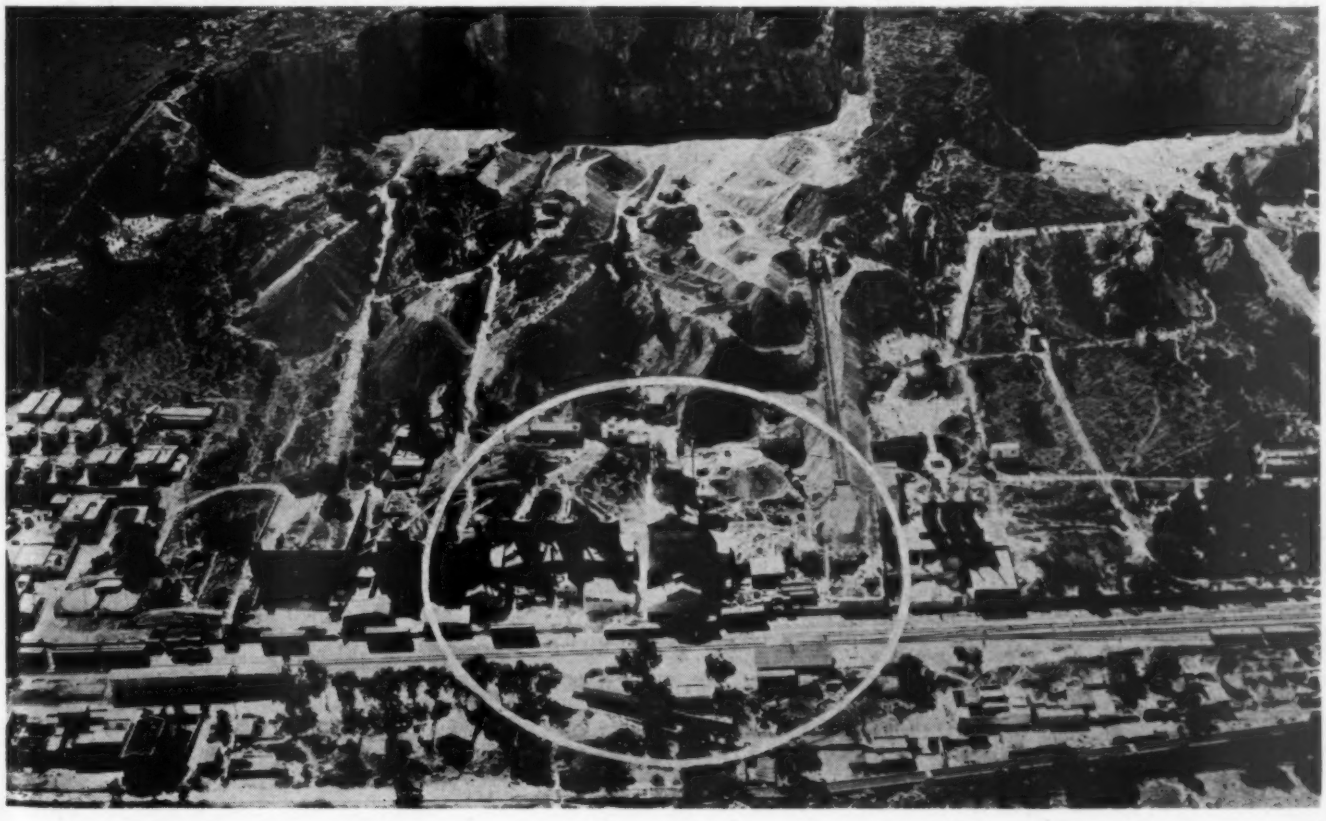
I believe that the production of lime and hydrated lime in the Federal District can conservatively be calculated at 1000 tons per day.

Until the last few months of 1946 —when aside from the natural low ebb of construction of these months of the year, and a peculiar situation created for the Mexican Government, which curtailed all its construction programs, affecting in the same manner private construction programs—there was an intense demand for lime.

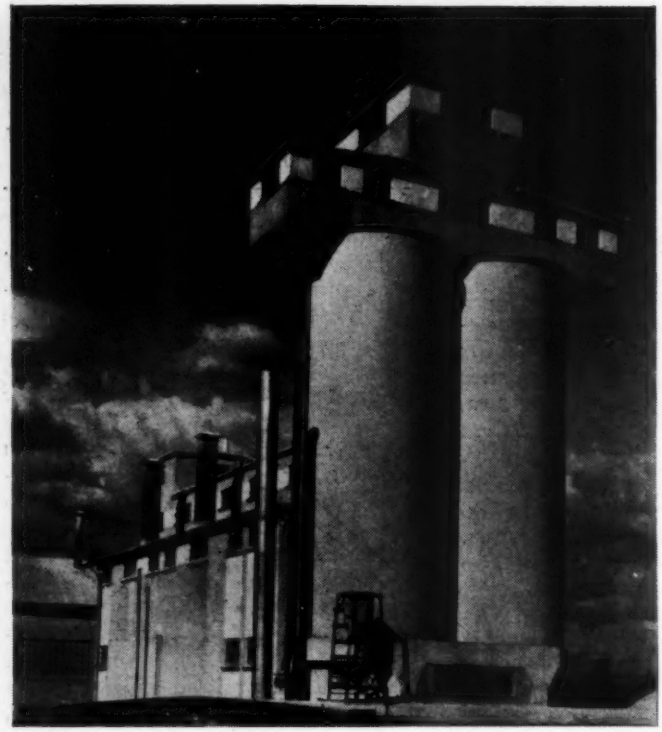
It is expected that once Government projects again get under way, the demand for lime will be as intense as it was before June, 1946, and will probably reach a new high peak.

PRODUCTION IN THE FEDERAL DISTRICT

Calidra, S. A. This organization, under the management of Ings. Luis & Alejandro Riefkohl, is operating vertical kilns, in Apaxco, Mex., about 60 kms. north of Mexico City, on the Mexico City-Laredo railway line. At this plant, where they calcine in the



• Cal de Apasco, S.A., (in circle) affiliate of Calidra, S.A., seen from the air.



• Partial view of Calidra, S.A., Mexico City, showing the hydrating plant and silos.

neighborhood of 150 tons a day, they also have a recently-completed hydrating plant, which gives them up to 80 tons of hydrated lime in 24 hours.

In Mexico City these people operate unquestionably the most modern and efficient hydrating plant in Mexico, at this time, which was brought over from Germany and completed in 1939. In this plant they produce in the neighborhood of 80 tons of hydrated lime per day, using as raw material calcined lime that they ship to Mexico over the railway from their kilns in Apaxco.

These people have ordered, and will install, also in Apaxco, a completely-new rotary kiln installation from Kennedy Van Saun Mfg. Eng. Corp., a unit which will give them close to 200 to 225 tons of unslaked lime, or pretty close to 300 tons of hydrated lime.

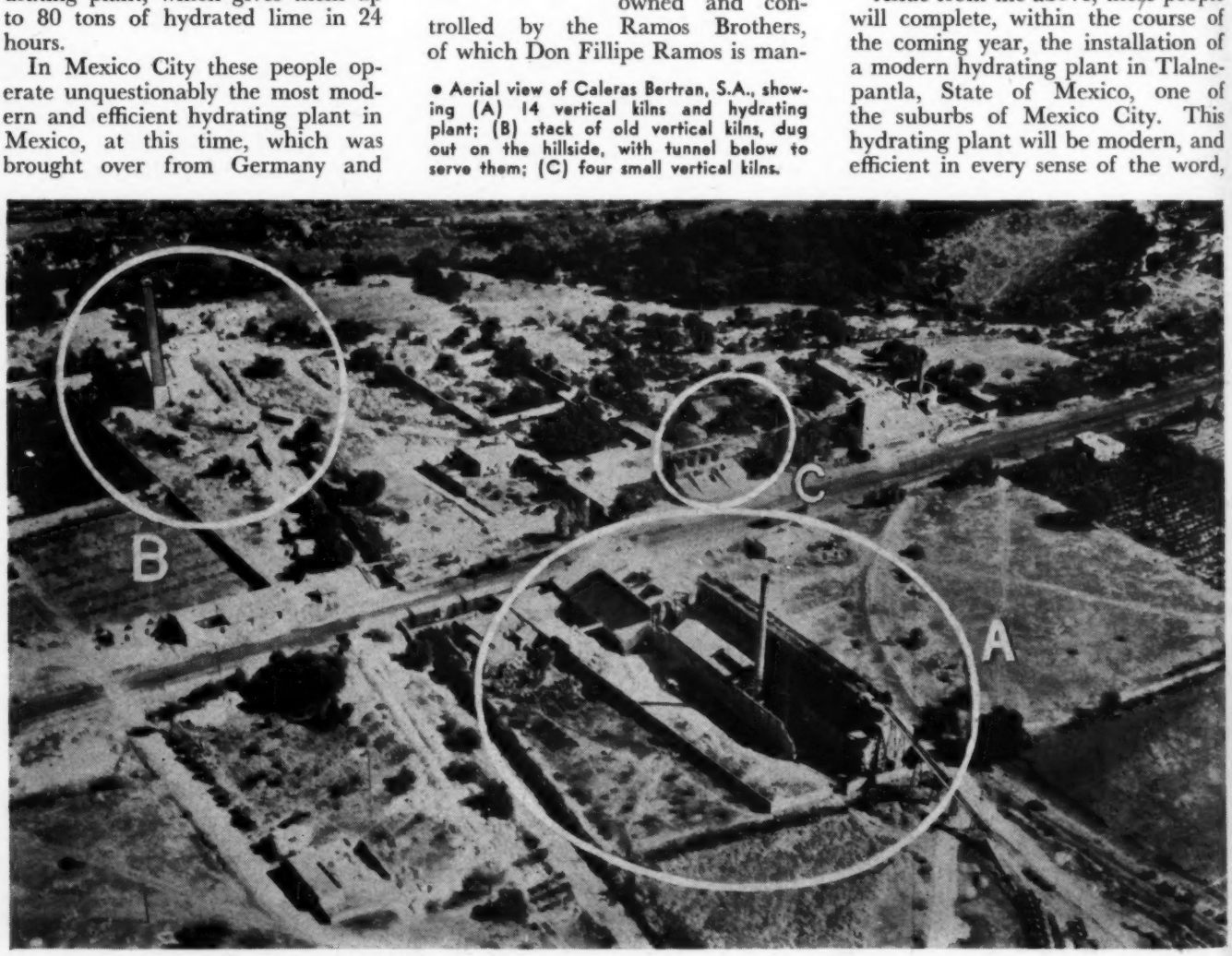
Piracal, S. A. This concern, owned and controlled by the Ramos Brothers, of which Don Fillipe Ramos is manager, has, at this time, about the same production as Calidra. The Ramoses are pioneers in the lime industry in the Federal District, their activities dating back 20 years or more.

• Aerial view of Caleras Bertran, S.A., showing (A) 14 vertical kilns and hydrating plant; (B) stack of old vertical kilns, dug out on the hillside, with tunnel below to serve them; (C) four small vertical kilns.

Under the name of Caleras Bertrán, S. A., they are operating about 18 vertical kilns in Calera, Hgo. Of these kilns, 5 or 6 have been in operation a long time, and 3 of them are built into the hillside with a tunnel underneath for the extraction of the burned lime.

Under the company name mentioned, this year they finished the construction of 14 vertical kilns, more or less mechanized, but at the same time having the inherent difficulties of all vertical kilns, that rock must be carefully picked to furnish the kiln rock from 5 and 6-in. up to 8-in.; this, of course, constitutes a heavy quarry loss, and at the same time makes for an imperfectly calcined final product, having a considerable amount of cores of raw lime. In combination with the kilns just mentioned, these people put up a hydrating plant, also at Calera, of 50 to 60 ton capacity, chiefly with second-hand equipment.

Aside from the above, these people will complete, within the course of the coming year, the installation of a modern hydrating plant in Tlalnepantla, State of Mexico, one of the suburbs of Mexico City. This hydrating plant will be modern, and efficient in every sense of the word,



• Left: Cal Hidratada Veracruzana, S.A., seen from the quarry.
• Right: The two 11 by 40-ft. vertical kilns at Cal Hidratada.

and will operate with calcined lime brought from their vertical kilns at Calera.

It is projected to install, in combination with this hydrating plant, a 50- to 60-ton rotary kiln in the not too distant future.

Beneficiadora De Cal, S. A. This concern is run and controlled by the Echeverria Brothers, Pedro & Juan. These people, like most lime producers in Mexico, have come up the hard way, and up to this time are operating a small plant in Tlalnepantla.

Here they have vertical kilns and a makeshift hydrating plant, which they operate at the rate of about 60 tons per 24 hours. The raw lime burned here is brought from their quarries in Calera, Hgo.

(These people also operate a gypsum plant located 21 kms. out of Mexico City, on the highway to Puebla, under the trademark of "Yeso el tigre").

These people are just completing what will unquestionably be, at the time it is inaugurated, the most modern lime-calcining and hydrating plant in Latin America, if not in all the world.

This unit, which will have a capacity of 100 to 125 tons of calcined lime, (about 165 tons of hydrated lime), was ordered complete in every detail, from Kennedy Van Saun Mfg. & Eng. Corp., and is as automatic as anything of its kind can be; it will require not more than four men per shift to operate. This will be the first plant that will be able to produce both industrial and chemical lime, and the stone is not touched from the time it is dumped into the crusher until the bags are loaded on the railway cars or trucks by belt conveyor.

PRODUCTION IN THE STATES

Orizaba-Cordoba District This is probably the second largest lime producing and consuming district in Mexico, the main producers being Peñuela y Contadero, S. A., Caleras Morales, S. A., and Cal Hidratada Veracruzana, S. A.

Penuela Y Contadero, S. A. These people are producing 35 to 50 tons of unslaked lime in 24 hours, and their plant is located just outside of Cordoba, Ver. They have no hydrating facilities, but they plan to install some in the not-too-distant future.

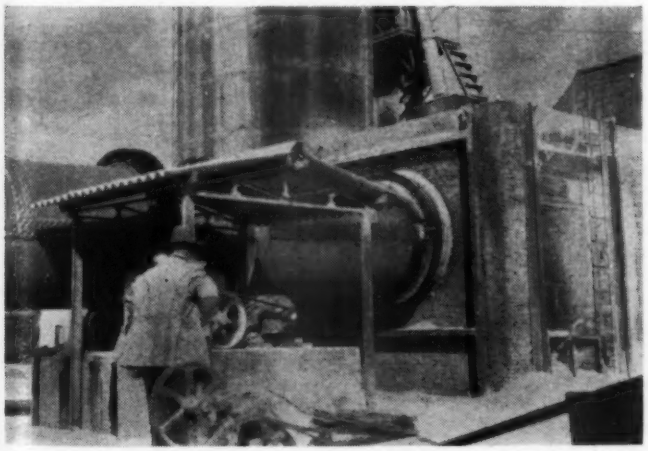
• At the facilities of Cia. Industrial de Marmoles, S.A., 50 to 100 tons of lime is produced daily.

Caleras Morales, S. A. This lime producer, located just across the highway from Peñuela y Contadero, is producing about the same as Peñuela y Contadero, and also has no hydrating facilities.

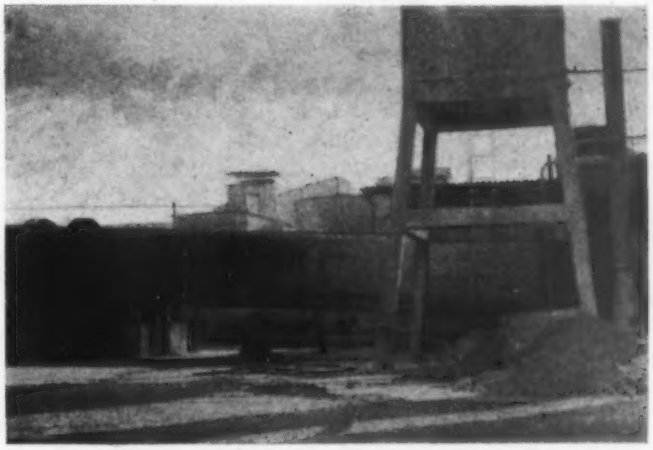
Cal Hidratada Veracruzana This installation, located between Orizaba and Fortin, Ver., is the most pretentious concern in the district, having just completed the installation of two 11- by 50-ft. vertical Azbe kilns.

While the kilns were first fired up in August or September, results obtained to date have been rather unsatisfactory, in that they have not been able to obtain more than 13 tons per kiln, as a maximum, and this with a rather high fuel consumption. It is expected and hoped that ultimately these kilns will reach their nominal production of between 50 to 100 tons in 24 hours.

This concern also has a small hydrating unit, but because of the difficulties had with the kilns, they have not been able to initiate lime



• The dust chamber end of the rotary kiln at Cal Tepeaca, S.A.



• A general view of the same kiln at Cal Tepeaca, S.A.

hydration up to this time. Ing. Agustin Montiel is superintendent of this plant.

In the Orizaba-Cordoba district, as throughout Mexico, there are numberless small producers, and the daily production and consumption of this district probably runs pretty close to 200 tons per day.

Cal Tepeaca, S. A. This plant is located just in the outskirts of Puebla, about 130 kms. south of Mexico City, and the outstanding feature about it is that it is now the only sizable rotary kiln in the country, operating a 6- by 60-ft. rotary kiln. The production from this kiln ranges from 60 to 80 tons a day.

These people also have the project of installing adequate hydrating equipment, and possibly a 50-to 100-ton-a-day gypsum plant.

Like all other regions in Mexico, Puebla has numberless small producers, and the production and consumption here also probably runs pretty close to 200 tons per day. Amongst these small producers is one plant having a rotary kiln, but with a production of not more than 20 tons a day.

Cia. Industrial De Marmoles, S.A. Under the direction of Manuel Garcia Pena, this concern is operating vertical kilns in Torreon, Coahuila, generally known as the Laguna, which is one of Mexico's most important cotton belts. This plant with its vertical kilns, produces 50 to 100 tons of lime per day. It is understood that they are contemplating the installation of a rotary kiln in the not too distant future.

Mazatlan, Sinaloa Affiliated with Cementos del Pacifico, with Don Ramon Salcido as head, a lime operation with vertical kilns is being started close to Mármol, just north of Mazatlán, Sin., one of Mexico's chief west coast ports. Two old Azbe kilns will be used, converting their combustion system from charcoal to oil; when in satisfactory operation, these two kilns will probably produce from 20 to 25 tons of lime each.

The company that is initiating operations, contemplates the installation of a modern hydrating plant, to take care of the production of the kilns mentioned above.

General There is practically no town in Mexico, from the smallest hamlet to the largest cities, most of them not discussed above, that does not have from one to several vertical kilns operated by small producers.

Important, and to be discussed in future articles remain the following regions: Monterrey, Tampico, Veracruz, San Luis, Yucatán, Chihuahua, Guadalajara, and Sonora.

To be able to judge the dollar and cent value of this production, we have the following figures: Hydrated lime is sold by the producers to the dealers at a price of 70 Pesos, roughly $14.00 a ton, and retails to the consumer for 80 Pesos, roughly $16.00. The production cost probably ranges from 35 to 50 Pesos per ton.

Loomis Talc Co. Moves Mill From Emeryville to Popple Hill

Removal of the machinery of No. 1 mill of the Loomis Talc Corporation at Emeryville and reinstallation at No. 3 mill of the equipment at Popple Hill marks the end of the smaller talc grinding units. The mill was built in 1920.

This move on the part of the Loomis company is designed not only to reduce operating costs, but because the Emeryville mill is more vulnerable to fire. The No. 2 and No. 3 units of the Loomis company at Popple Hill will be the largest talc producing plant in this area.

A year ago the International Talc Company was operating three talc mills, but No. 5 mill was closed last fall and its machinery installed in No. 6. International's No. 3 mill burned last May.

Explosion at Marquette Plant Laid to Coal Dust in Tank

An explosion said to have been caused by coal dust sent flames racing through the clinker-burning department of the Marquette Cement Manufacturing Company's plant at Nashville, Tenn., endangering the lives of four men, all of whom were injured as they jumped from a 15-ft. scaffolding.

Those receiving injuries and burns were employees of the Nashville Bridge Company, engaged in repairing the clinker-burning installations. It is thought that riveting operations which had been in progress on a large conical tank may have caused the blast. The tank had been emptied of coal a short time before the explosion, and may have contained fumes and a coating of coal dust.

Output and Consumption Of Asbestos Climb in 1947

A record volume of 25,139 short tons of asbestos was mined in 1947; this was 74 percent more than in 1946, according to the U. S. Bureau of Mines. Domestic production came principally from Vermont, with minor amounts from Arizona, North Carolina, Georgia and California.

Imports provided 96 percent of the asbestos used in the United States in 1947. Canada supplied 91 percent, while Southern Rhodesia and the Union of South Africa supplied 5 percent. Demand has been in excess of supply throughout 1947, being particularly strong for fiber for asbestos-cement products and floor tile. The bulk of the asbestos consumed is the chrysotile variety; however, amosite, blue, and tremolite are required for special uses.

Domestic consumption rose to 616,787 short tons, a 34 percent increase above the figure for 1946.

Lawrence Dragon Revived— Makes Successful Comeback

The *Lawrence Dragon* is the arresting moniker of the Lawrence Portland Cement Company's publication. An editorial note states that the *Dragon* is "not a new publication; it is merely being revived." Vol. I, No. 1 reveals that the publication derives its name from the brand name of the company's product, Dragon portland cement.

This first post-revival issue contains photographs of several large concrete construction projects, among them the Portland Cement Association's new $2,000,000 research and development laboratory at Skokie, Ill.

Safety measures also were emphasized. Page 10 carries a photograph of the presentation of the P.C.A. safety certificate to the staff of the company's Northampton, Pa., plant. Upon this occasion rededication ceremonies were held at the safety trophy monument, and individual certificates were awarded to 56 employees who had given 25 years or more of service without a lost-time accident.

The Thomaston, Me., Lawrence baseball team came in for its share of glory, too. The group picture of these "Dragons," described as "snorting fire and brimstone," and a brief account of their victories appeared on page 3.

We wish the resurgent *Dragon* a long and successful career, for we believe it must be a benevolent monster, subsisting as it does on so harmless a fare as portland cement.

Nonmetallic Minerals Industries Show Greater Output, Earnings

Sales and earnings of several big-time nonmetallic minerals producers have followed the current upward trend, accord to published figures for the year, as well as for the 6-month and 3-month periods.

According to the 6-month (January to June) report issued by the United States Gypsum Company, the net income of that firm this year amounted to $11,705,427, as against $7,717,367 for the first half of last year. Net sales in that period (this year) exceeded last year's figure for the comparable period by 39 per cent, reaching $70,314,606.

For the second quarter of this year, Texas Gulf Sulphur Company reported a net profit of $6,403,631. The American Potash & Chemical Corporation's sales figure for the first six months of 1948 reached $7,137,905, an increase of $452,339 over the total for the like period in 1947.

40-Year-Old Transport Converted Into Fast Self-Unloading Freighter

By R. ARNDT
Sales Engineer
General Electric Company

ONE of the fastest self-unloading systems yet devised, including the world's largest shipboard boom conveyor, has been installed recently on the Great Lakes vessel S.S. *Crispin Oglebay* by the American Shipbuilding Company. Conversion of the ship, formerly the S.S. *S. B. Way,* was completed in June. The ship is owned by the Columbia Transportation Company.

The new all-electric conveying system is powered by modern General Electric induction motors totalling 750 horsepower. Normal unloading speed of 1,800 long tons per hour for ships of this type has been increased on the *Oglebay* to 2,200 long tons per hour. The installation is capable of higher speeds, but the operators feel this to be a convenient and economical speed.

The high unloading rate was obtained by widening the hold conveyor belts from the 42 inches commonly used to 48 inches, and the boom belt from the usual 48 to 60 inches. Its 96-in. bucket elevator speed is 100 f.p.m. The extra width not only allows for greater unloading speed but also permits the belts to be run at lower speeds to reduce wear and tear.

The conveyor boom is of all-welded, alloy steel construction, which reduces its weight by about 10 percent. Its 240-ft. length, longest ever employed on a self-unloader, makes it almost half as long as the ship. Several innovations have been added to give it easier swinging ability. An A frame for hoisting and supporting the boom rises 52 feet above it near the bow. The A frame goes all the way to the bottom of the ship and is fastened rigidly to the hull and framing on the sides and bottom. The apex of the A frame is fitted with a swivel arrangement that allows the upper end of the boom to move freely. The boom can swing an arc of 113 degrees on either side of the centerline and can be inclined up to 30 degrees from the horizontal, but the recommended maximum inclination is 18 degrees.

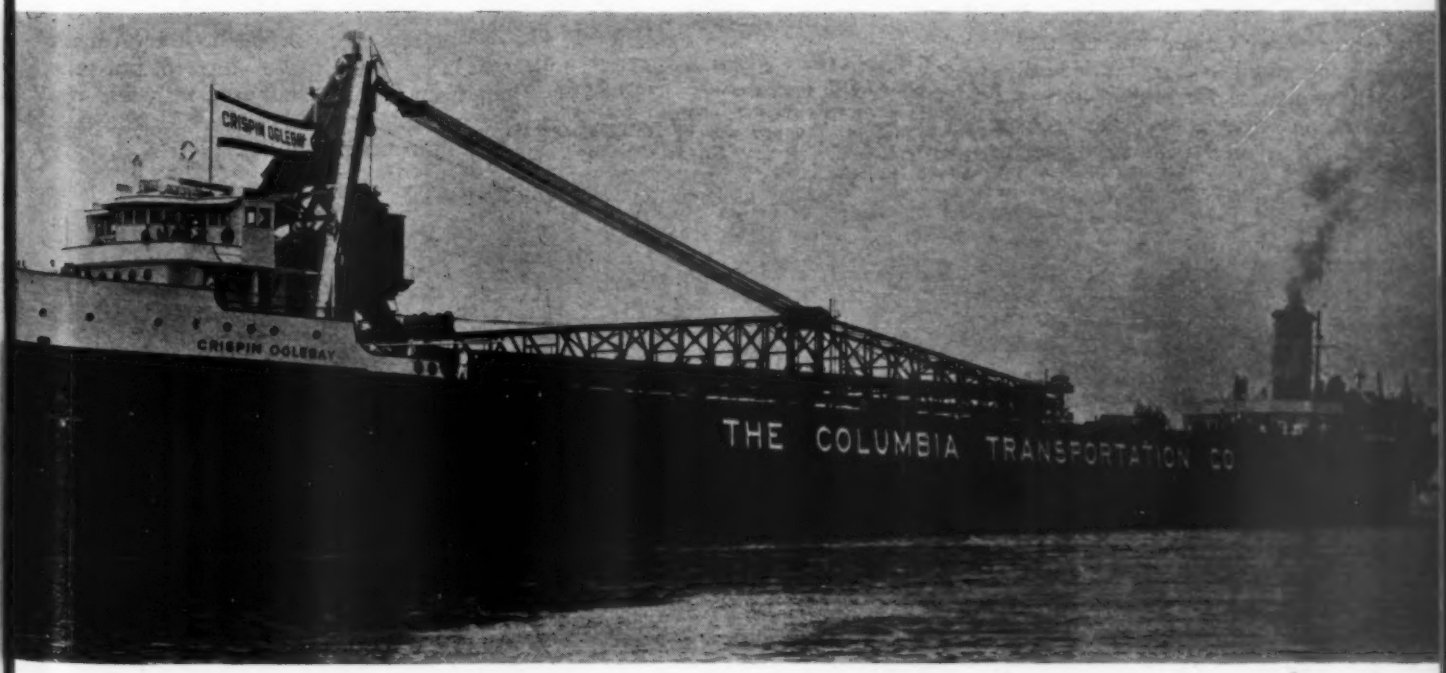
The conversion of the 40-year-old bulk freighter called for complete removal of the transverse bulkheads between the forepeaktank and the after cargo bulkheads and for rebuilding of her inner bottom and side tanks throughout the cargo holds. The *Oglebay* now has six cargo holds, hoppered on either side of the centerline to deliver cargo to two longitudinal belts located under the hoppers.

The old electric plant was completely removed and a new and more efficient one was put in its place. Two General Electric turbine-generators, each rated 400-kw., 450-volts, 60-cycle, were installed to supply main electric power, and a 100-kw. turbine-generator has been installed for underway operation of the auxiliaries and lighting. A new main and auxiliary switchboard and a matching engine room group control board also were installed.

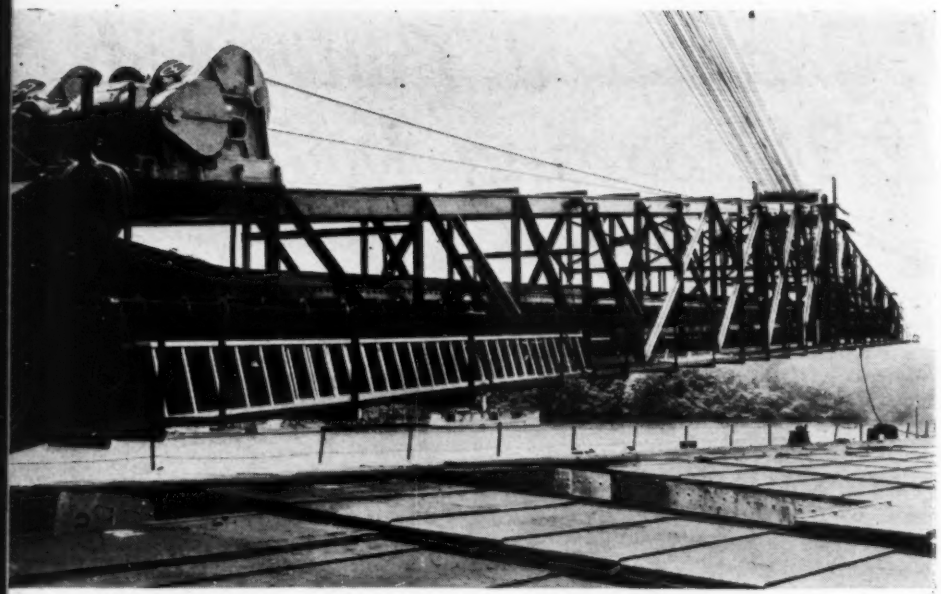
The two hold conveyors, traveling 325 feet per minute, deliver the ship's cargo of coal or limestone forward to the elevator, which takes it up and slightly aft to a hopper at the pivot end of the boom. The boom conveyor moves at 425 feet per minute and can discharge cargo from 230 to 235 feet away from the ship.

Safety and reliability were the main considerations in the design of the conveyor control system. Control stations are totally enclosed and dust-proof. Low voltage control circuits are used, with supply from a 110-volt, a.c. separate transformer.

In case of emergency, all conveyors can be stopped by a small cable, similar to a railway bell cord, installed in the hold conveyor tunnels, or from individual emergency



• The freighter S.S. "Crispin Oglebay", newly converted self-unloader of the Columbia Transportation Co., now in service on the Great Lakes.



• The boom conveyor — said to be the world's largest—aboard the "Crispin Oglebay", is driven by a 300-kw. induction motor.

stop stations located at every other hatch on the weather deck. If the boom conveyor belt should slip, a speed switch is provided that automatically stops the hold and elevator conveyors to avoid overloading the boom hopper.

When cargo is being unloaded the noise is so great that audible alarms have been found to be useless. For this reason the lights over the conveyor belts in the hold tunnels are used to give orders to the operators. These lights are controlled by push-button switches located at all the master stations. The same lights can also be used to indicate overloading of the belts by means of a relay in the primary of each motor. The lights flash off and on to warn of an overload.

The conveyors are controlled from three master stations and can be operated either individually or in sequence. Normally, during unloading operations, the sequence control is used with the boom conveyor starting first, then the elevator, and last the hold conveyor, so there can be no pile-up of cargo below-decks. In sequence control the hold conveyors cannot operate unless the other conveyors also are operating.

Slow motion drive has been installed in the hold and elevator conveyors to allow for oiling and maintenance. These are operated by G-E 1-hp. motors, one on each belt. Control for this system is so arranged that when either of the auxiliary drives is running, the master control circuit cannot be operated.

Perhaps the most unique installation aboard the vessel is the G-E 300-amp. motor-driven welder mounted permanently in the engine room. Leads from this welder are run to all machinery spaces and to the deck through a separate welding circuit. This permits the operator to control the arc from any of these

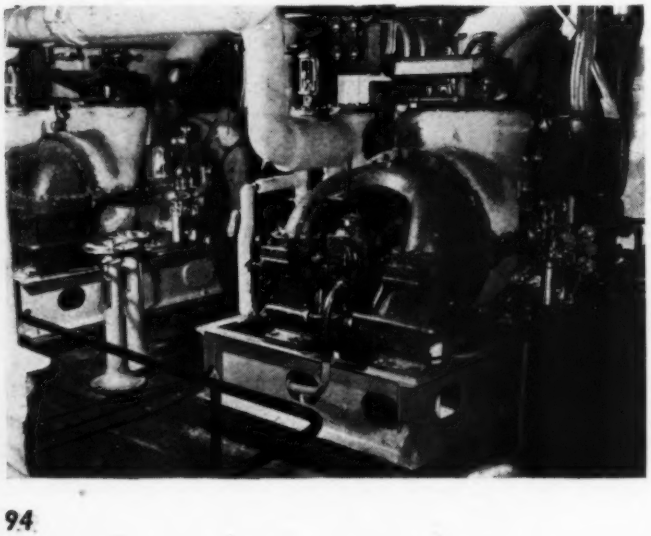
• The A-frame for hoisting the 240-ft. conveyor boom. The boom hoist winch is in the foreground, the new radar antenna at the top.

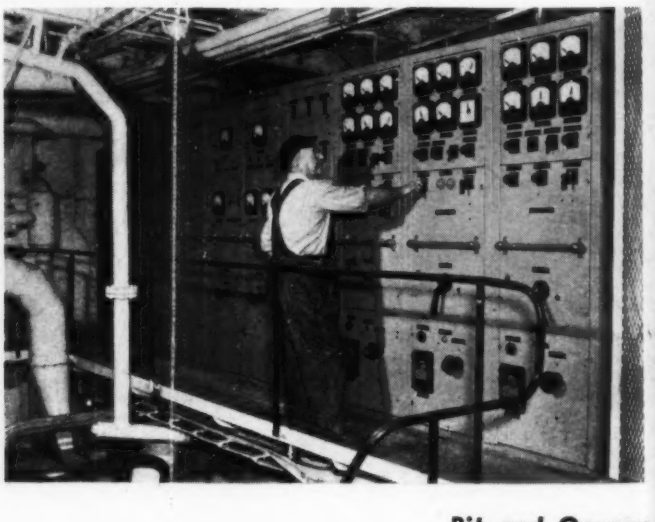
stations by push-button control. Through this remote control of the field rheostat of the welding generator, he may weld at virtually any spot in the ship with little or no trouble.

In service now, the *Crispin Oglebay* is not recognizable as the old bulk freighter that went into the shipyard. In addition to the electric unloading equipment, the boilers were replaced, the main engine was overhauled, and a new propeller and rudder were mounted. The changes are expected to give an increased loaded ship speed of one mile per hour.

The changes that have been made now permit the ship to put into many ports that previously she was unable to visit because of inadequate unloading facilities.

• Left: The two 400-kw. turbine-generator sets which supply electric power to the self-unloading equipment.
• Right: The operator at the 900-kw. main switchboard of the "Crispin Oglebay".





Dirt-Free Diesel Operation in Nonmetallic Mining Industries*

"THE importance of keeping dirt and moisture from entering the working parts of a diesel engine cannot be overstressed," says W. W. Black, manager, service and parts dept., Industrial Power Division, International Harvester Co. "Ninety-nine cases out of each 100 involving excessive engine wear are caused by abrasion. This abrasion usually results from dirt carried into the engine through the fuel system, by the lubricating oil, or . . . . through defective engine gaskets and seals."

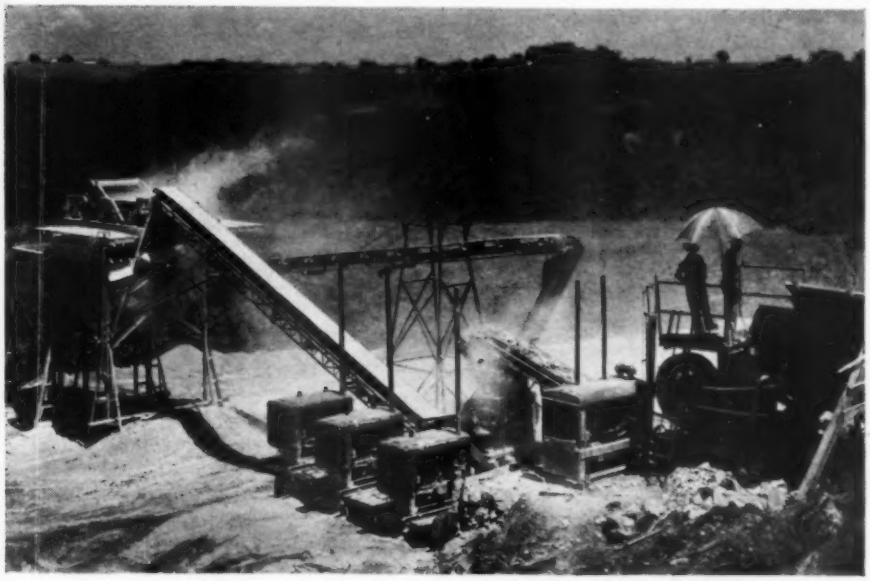
Mr. Black points out that while diesel engines are equipped with fuel filters, oil filters and air cleaners, all highly efficient under normal operating conditions, such units have definite limitations. Filter elements may clog with dirt, and the oil bath in the air cleaner may become so contaminated that its cleaning efficiency is reduced. Furthermore, filtering systems are useless in the face of leaky engine gaskets and seals. This is particularly true of leaky gaskets, seals, hose connections and lines in the air cleaner system. Unfiltered air is the main cause of excessive piston, piston-ring and cylinder-wall wear. Naturally, wear on these parts increases oil consumption.

Adding to the problem, diesel engines are often called upon to operate under extremely dirty conditions. A diesel tractor working in fine, dusty soil, or a power unit installed in a quarry are two good examples in which airborne dirt makes extra maintenance precautions necessary.

The more important steps in a maintenance program to keep dirt and moisture from entering the engine are as follows: (1) selection of the proper fuel from a reliable dealer, and fuel storage facilities designed to avoid contamination; (2) frequent inspection of fuel filters and filter elements; (3) elimination of entrapped dirt during fuel system overhauls; (4) frequent inspection of oil filters and oil filter elements; (5) maintenance of a clean oil bath in the air cleaner; and (6) frequent inspection of all engines and accessory gaskets and seals.

Fuel System Cleanliness The fuel system is the heart of a diesel engine. Dirt or water in the system will not only detract from immediate engine power output, but will eventually cause excessive wear of the high-precision fuel system components. This wear may be due to abrasion (caused by dirt), or to corrosion (caused by entrapped moisture or chemical impurities in the fuel).

Precautions in purchasing, storing and handling of diesel fuels will eliminate many trouble sources right at the start. Make certain that the right grade of clean fuel is delivered into the storage tank or barrels. Storage facilities should be shaded from



• Left: Diesel-powered units operating a crusher-conveyor installation, with clouds of dirt everywhere. Those charged with engine maintenance must make sure that it does not get into the engine.

• Below: Diesel-powered crawler tractors moving earth in a pit. Working conditions are often exceedingly dirty. Approximately 99 percent of all diesel engine wear is caused by such dirt getting into the engine.

*Prepared from information furnished by W. W. Black, Mgr. Service & Parts Dept., Industrial Power Division, International Harvester Company.

• Most diesel engine fuel systems are "safe-tied" at intervals with filters, screens and water traps. Each must be inspected and cleaned or drained at regular intervals. Here a diesel engine primary fuel pump filter has been removed for inspection.

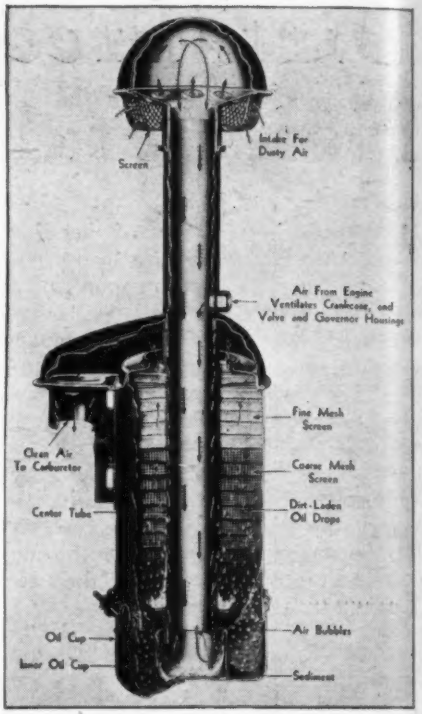
the sun to avoid heat, which causes gum formations; and each tank or barrel should contain a water and sediment trap for unavoidable dirt and for water resulting from internal condensation.

The fuel tank of the diesel engine should be filled immediately each time the engine is stopped for a prolonged period, to eliminate moisture-filled air space above the fuel supply and to prevent condensation of this moisture during atmospheric temperature changes. All water traps located in the engine fuel system should be checked and cleaned daily; oftener, if required.

Vent the fuel system each time the fuel supply runs low to make sure that air does not enter the system. The system must be filled with solid fuel at all times. Check all fuel filter elements frequently. Filter elements clogged with wax, dirt or other foreign matter comprise the most common cause of erratic engine operation and loss of power.

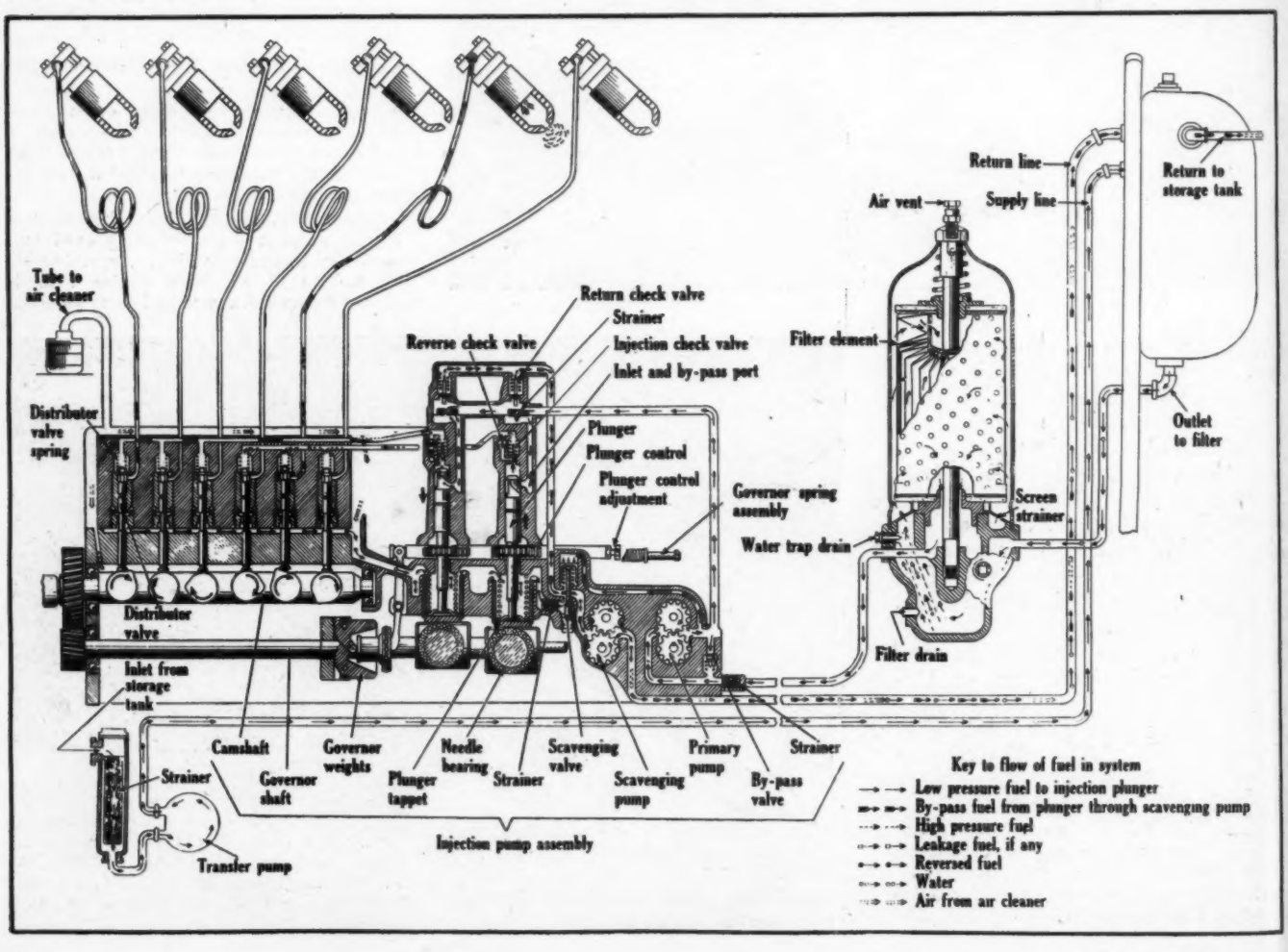
Injection nozzles should be checked at least once every six months for cleanliness and opening pressure. A partially clogged nozzle orifice will cause erractic engine operation and loss of power. Make certain that the scavenging valve of the fuel injection pump is functioning properly. This valve may become stuck due to dirt or corrosion.

When it is necessary to disassemble and reassemble the fuel injection pump, do it in a clean, dust-free room. Never disassemble the



• Cut-away view of a diesel engine air filter. This component cleans intake air prior to its entry into the engine. Correct operation of the air cleaner is a "must" in diesel operation. Unfiltered air will cause rapid wear of the pistons, piston rings and cylinders. Air cleaner oil bath should be changed frequently. All cleaner gaskets and seals must be kept tight.

• A diagrammatic view of the fuel system used on 6-cylinder International diesel engines. This system is the heart of the diesel engine. Permitting entrance of dirt will soon injure the close-tolerance fuel pump parts; moisture will cause corrosion. All such systems, however, have adequate provisions for preventing entry of dirt when in the hands of a careful operator.



pump outdoors. The close tolerance of the parts may be destroyed by inclusion of a single piece of grit during reassembly. Wash all parts thoroughly in clean fuel oil just prior to reassembly.

Lubrication System Cleanliness The lubrication system in a diesel engine serves two distinct functions—it supplies a lubricant for reducing friction between moving parts; and, just as important, it flushes away abrasive dirt and microscopic metal particles produced by normal wear. The dirt and metal particles are removed from the lubricant either by the oil filters, or by a settling process which produces sludge in the lower portions of the oil reservoir (usually the crankcase).

Maintaining cleanliness in the lubricating system demands, first of all, clean, wax-free lubricating oil. Purchase such oil from a reliable source and keep it in clean, closed oil containers until ready for use. Use only clean containers when replenishing engine oil supply. Inspect oil filter elements frequently for signs of clogging and wax accumulations. Do not prolong the use of dirty filter elements.

Another source of lubricating oil contamination is through the crankcase breather. Quite often visual inspection of the screen in the breather will indicate this condition. A better check, however, is to use a U-tube filled with water and connected to the breather orifice. Action of the water in the U-tube, with the engine operating, will indicate whether crankcase suction or pressure is developing. Slight crankcase pressure is desirable, but suction is not permissible.

Clean Air Necessity If unfiltered air were allowed to enter a diesel engine, carrying with it considerable atmospheric dirt, completely worn out piston rings and cylinder walls would result in 55 to 65 operating hours! Therefore, inspection of the air cleaner and maintenance of its proper operation are vital factors in engine life.

Air enters the cleaner through an oil bath and swirls upward toward the cleaner outlet, carrying minute particles of oil with it. These droplets are caught by a wire mesh screen through which the air must pass are then returned by gravity to the oil cup. The oil in the bath must be thin enough to allow free passage of the air through it. This thinness, of course, will vary with outdoor temperatures and must be controlled accordingly. Kerosene is often employed as a thinning agent during cold-weather operation.

Use only clean engine oil of the proper viscosity when replacing or replenishing the oil bath. The use of crankcase drainings for this purpose should be discouraged. Foreign matter in the old oil will be carried upward in the air stream and may partially clog the wire mesh screen, thus reducing the air cleaner's efficiency. The best practice is to use new oil for initial filling of the oil bath container, then pour off and save the top portion of this oil when cleaning the cleaner. The sediment will remain in the bottom of the cup and may be discarded. Thus only enough new oil to replenish that thrown away is required.

During dry seasons or when operating in arid territories, the air filter gaskets may shrink sufficiently to allow unfiltered air to enter the system. Therefore, frequent inspection of these gaskets should be made. Keep all hose connections between the air cleaner and engine tight, and inspect all air lines for excessive wear or holes caused by vibration and chafing.

General Cleanliness Occasionally, despite air cleaner and breather checks, it will be obvious that excessive dirt is finding its way into the engine. This is usually due to defective engine gaskets and seals. When such a condition is suspected, replacement of the gasket or seal should be made immediately.

Most diesel tractor manufacturers provide as an accessory reverse flow cooling fans, which prevent dirt, leaves, insects, etc., from being drawn into the radiator cooling fins by the air stream.

The economy and dependability of diesel engines has been proved beyond question; but as with all types of engines, complete utilization of these desirable features is accomplished only in conjunction with a preventive maintenance program carried out in a manner to keep the engines in finest operating condition at all times. Internal engine cleanliness is a vital part of this program, and should be regarded as such by all enlightened diesel engine mechanics.

A.S.T.M. Cement Standards For 1948 Now Available

The American Society for Testing Materials recently issued the 1948 edition of *A.S.T.M. Standards on Cement*, presenting in convenient form the seven specifications for portland and other types of cement, and giving fifteen standardized methods of testing. It also includes considerable supplementary material including the following: information on analytical balances and weights, a manual of cement testing, a list of selected references on portland cement, the principle of the methoxyl method for determining vinsol resin in portland, proposed method of test for setting time of hydraulic cement in mortar, and the personnel of Committee C-1 on cement and its subcommittees. The specification for sieves for testing purposes is also given.

The cement specifications cover the five types: portland; blast-furnace slag; natural; masonry; and air-entraining for concrete pavements.

The book may be procured from A.S.T.M. headquarters, 1916 Race Street, Philadelphia 3, Pa., at $2.00 per copy.

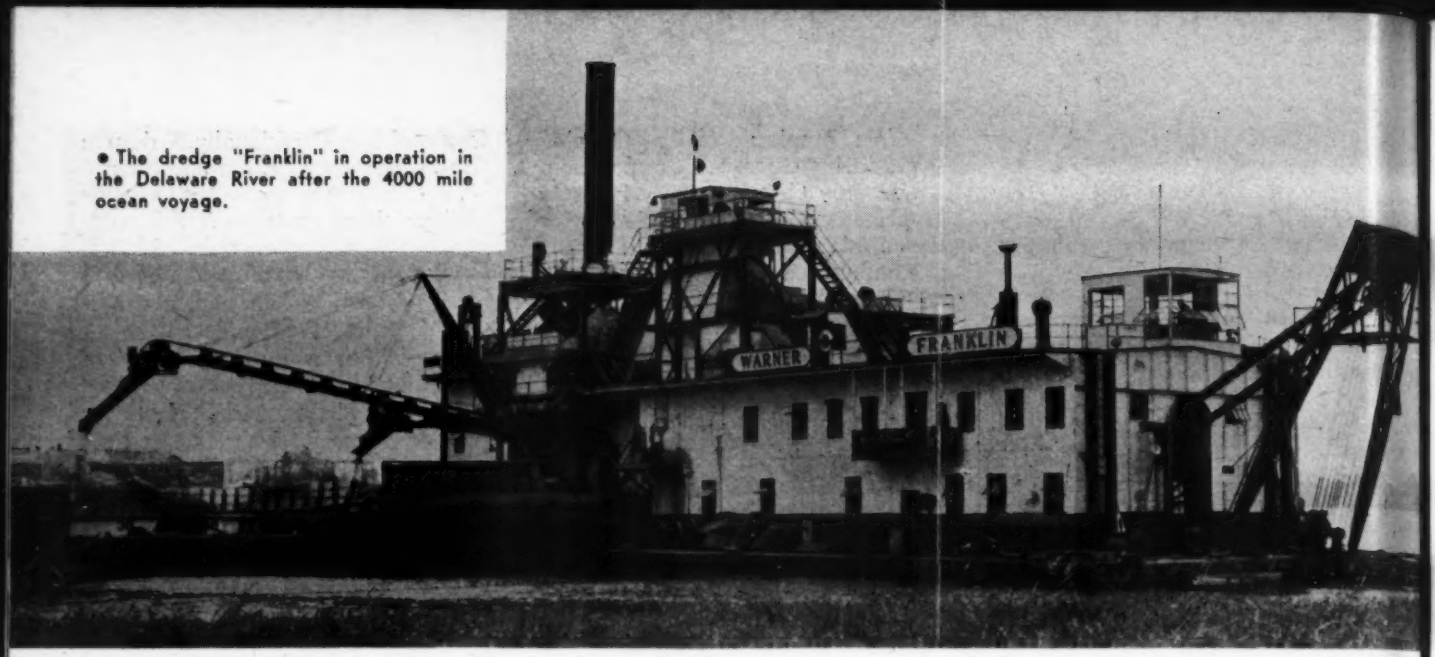
General Portland Cement Co. Loses James Preston Hoskins

James Preston Hoskins, director-assistant secretary and assistant treasurer of General Portland Cement Company, died in Chattanooga, Tenn., on August 2, 1948, after a brief illness.

Mr. Hoskins was born December 2, 1864, in Lexington, Miss. He attended preparatory school in Meridian, Miss., and Mississippi Agricultural and Mechanical College in Starksville.

He became affiliated with the Signal Mountain Portland Cement Company as a director in 1923 and in 1933 was made secretary and treasurer. In 1947 he became assistant secretary and assistand treasurer of General Portland Cement Company. He was a director of Davenport Hosiery Mills and agent for the trustees of the Cincinnati-Southern Railway. For 33 years he was president of the Chattanooga Gas Company.

• P. J. Moore & Son, North Sacramento, Calif., find this bulldozer-equipped "Caterpillar" diesel D6 tractor, teamed with a Hyster Hystaway, a profitable means of excavating gravel near Williams, Calif. The unit has loaded as much as 1,080 yards per 8-hour day, at a fuel cost of about 25 cents per hour.



• The dredge "Franklin" in operation in the Delaware River after the 4000 mile ocean voyage.

Modernized Gravel Dredge Boosts Warner's Output

By W. L. PRICE
Dravo Corporation

another P&Q exclusive

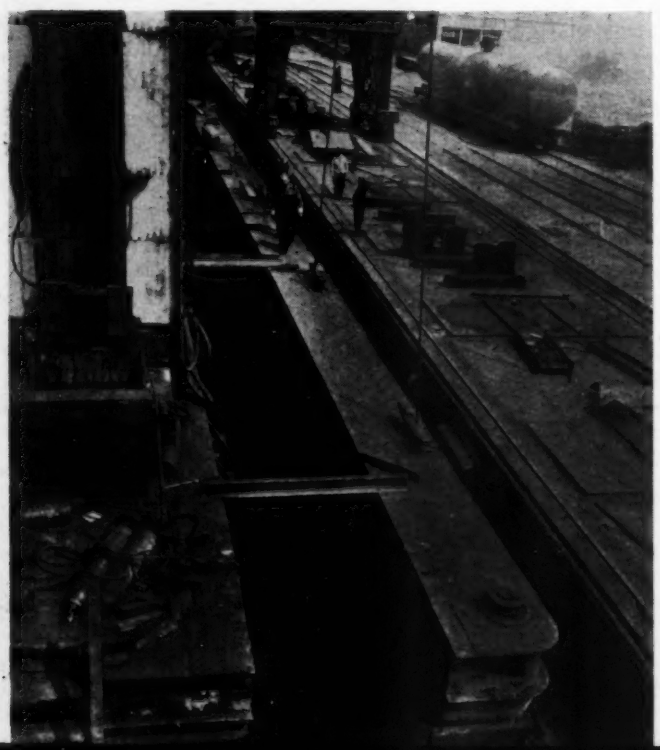
THE Warner Company of Philadelphia is one of the largest producers of sand and gravel in America. Their market area abounds in subways, skyscrapers and a closely-woven network of concrete roads. In a section of high population concentration, Warner Company has kept abreast of ever-increasing demands by placing heavy emphasis on constantly modernizing and improving their facilities and methods.

Their Van Sciver digging and processing operation, located near Morrisville, Pa., closely approximates a "model" plant, and produces aggregates at the rate of about 1000 t.p.h. Material is dug from a man-made lake which now covers approximately 560 acres. The lake itself is about 7 miles inland and a company-operated standard-gauge railroad supplies the connecting link from the land plant to a barge landing terminal on the Delaware River. Eighty-odd barges shuttle back and forth between this terminal and Philadelphia, Pa., Camden, N. J., and Wilmington, Del.

With the Van Sciver processing plant operating at full capacity and the demand for sand and gravel soaring upward toward a new record figure, the Warner Company was faced with the problem of finding a way to increase an already high output.

The best solution seemed to be a dredge that could dig in the Delaware River and load finished products, screened and crushed, independent of the overloaded Van Sciver plant. Steel and other material shortages made the purchase of a new dredge impracticable. The time needed to build one would be so long that the operation would be in serious difficulty before the dredge could be delivered.

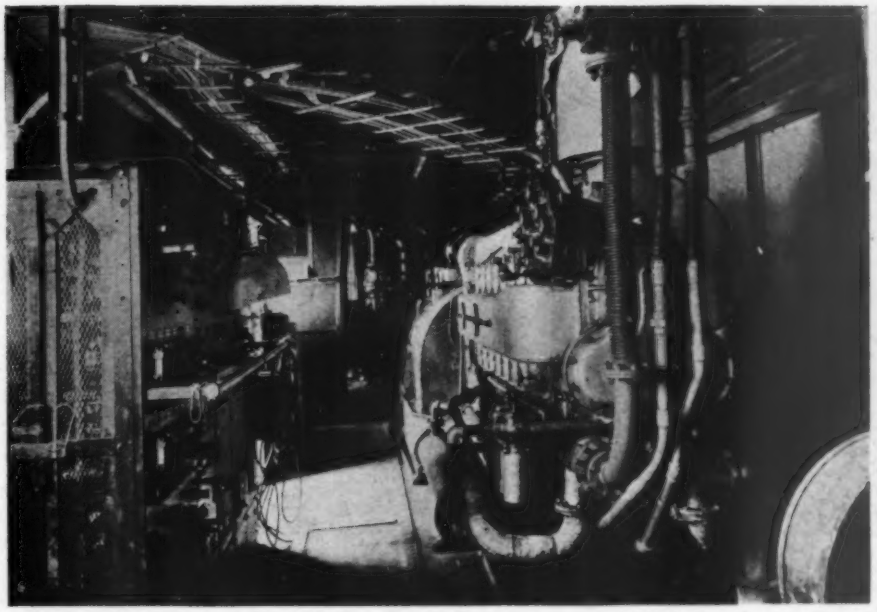
The company began to search for a dredge that might be rebuilt to meet their needs and finally locating the dredge Pittsburgh. This western



• Left: Cutting torches knifed through the hull from end to end; then two cranes lifted the 160-ft. long, 17-ton cut-away section outward to the exact position for a wider hull.
• Below: New framing and trusses were installed between the hull and cut-away section. Here is seen the serrated channel framing, welded in place, is ready for deck plating.

bucket-type ladder dredge had been built for the Pittsburgh Plate Glass Company by Dravo Corporation in 1927, but had been out of operation for several years. It was originally designed to produce a fine grinding sand, an entirely different material from that needed by the Warner Company. Extensive alterations would be required to fit it for its new work. In addition, the specifications for sand and gravel have become rather exacting in the 20 years since the dredge was built and much more equipment than was originally installed would be required to satisfy the consumer's demand for clean, well-graded material.

In deciding on the alterations required, several facts were at once apparent. It would be necessary to produce two grades of sand simultaneously—a fine sand for mason work and a coarser grade for the ordinary concrete mix. At times, highway sand would be required, calling for an even coarser top size and ranging down to material passing a 100-mesh screen. For the production of gravel an arrangement that could produce three sizes of gravel was required—the largest with a top size of 2¼ in.; ordinary 1¼-in. gravel; and ¾-in. pea gravel, any two sizes to be loaded simultaneously. Each of these nominal sizes actually requires a well-graded mixture of all sizes of gravel within the range from top to bottom. Since the natural deposit does not always contain the desired sizes in the correct proportions, grading screens would be required to separate the gravel into the component sizes with a means of mixing them back together in controlled proportions. To produce a gravel with a given percentage of crushed material, a crusher with the means of feeding to it various proportions of the larger gravel sizes would be required. To load the two grades of sand and two sizes of gravel into separate barges, four new loading conveyor belts were necessary.



• A 290-kw. diesel generator set (right) provides the additional electrical power required. New electrical switchboard and new wiring (left) were installed to feed the 13 new motors.

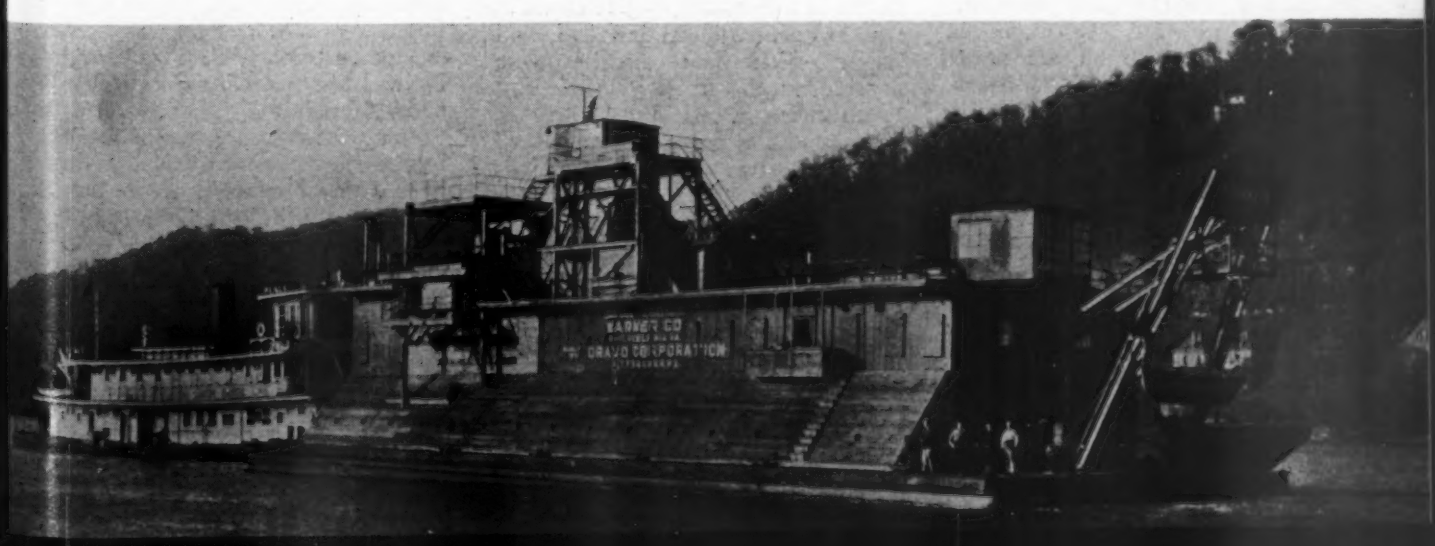
Naturally, all this additional processing and handling of the aggregate meant additional power requirements. A 290-kw., d-c. diesel generator was decided upon to supplement the existing steam-driven machinery. To provide more buoyancy for the weight of this additional equipment, the hull had to be enlarged.

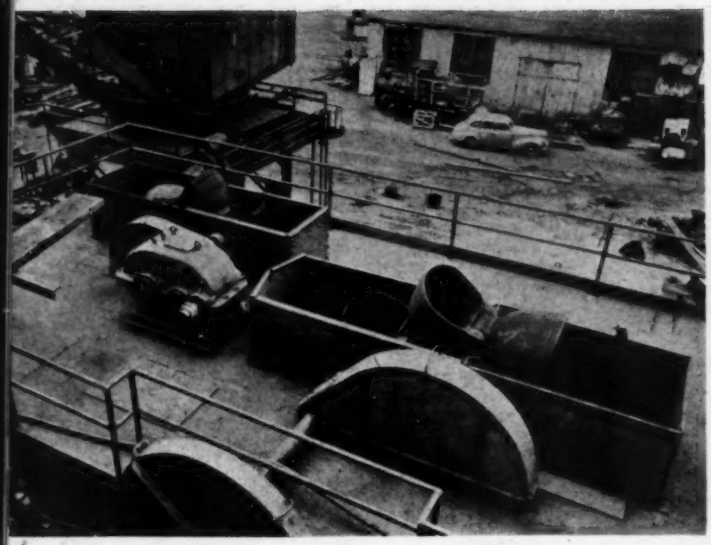
To meet these essential requirements, utilizing as much as possible of the existing dredge, a new design was prepared by Dravo Corporation, working in close collaboration with E. L. Shoemaker, chief engineer of the Warner Co. Upon completion of the engineering studies, the dredge was brought from its storage place in the upper Allegheny River to the Dravo Marine Ways at Neville Island on the Ohio River to begin the work of reconstruction.

The first and probably the most spectacular project involved was the widening of the hull. (It was increased 6 feet on each side.) To accomplish this, the dredge was hauled out of the water on the marine railway, and the hull was slit for the entire length with burning torches at a point two feet inboard of the hull side. Each 160-ft.-long outer piece of the hull (weighing 17 tons) was lifted in one piece and moved outboard from the hull the required 6 feet. These sections were shored up in place and work was started on filling the gap in the hull. In accordance with the most modern structural methods, the additional hull sections were of all-welded construction, prefabricated in advance in the Dravo shops and erected on the site.

Upon completion of the hull widening, the superstructure work was undertaken. Two new endless bucket sand elevators were installed, capable of lifting the dewatered sand to a height of 39 feet. Their purpose was to elevate the sand after it had been graded on the main rotating screen, lifting it to a height which would permit loading the two sand barges by means of the two new

• The "Franklin" at Neville Island, nearly ready for the ocean voyage. Note the controlhouse, walkways and rails.





• Above: The sand conveying buckets were shipped to Wilmington, Del., by rail and were strung on the dredge at Dravo's Wilmington plant. Each bucket weighs 600 lbs., and there are about 55 on a string.

• Right: The digging ladder and buckets being installed at Wilmington, prior to delivery of the dredge to the Warner Company at Philadelphia.

24-in. belt conveyors on the starboard side. To prevent the loss of fine sand in the main screen wash water, a large settling vat was installed at the foot of each bucket elevator. A recirculating system requiring a new 8-in. Lawrence sand pump was added to use this same wash water continuously, with an arrangement to add any desired amount of clean water in the system.

On the starboard, or gravel side of the dredge, a new Nordberg-Symons 4¼-ft. gyratory crusher, powered by a Westinghouse 150-hp. motor, was installed. Provision was made for installation at some future date of a secondary crusher for smaller-sized material. Two new triple-deck Allis Chalmers 5- by 12-ft. Lo-Head vibrating screens were mounted to be used in grading the gravel for loading the required sizes. A newly-installed "mousetrap," a giant mixing box, was installed directly following the shaker screens. The two selected sizes of gravel can be loaded directly into separate barges by two new 24-in. conveyors similar to those on the sand-loading side. The longest of these four new outboard conveyors is over 75 ft. long. All of the conveyors can be folded back against the side of the dredge when it is moved from place to place. Another feature is the motor-driven revolving trimming chute at the outboard end of each conveyor to permit loading in wide, flat piles, with the minimum of segregation of the material.

Although the two existing 150-hp. boilers were originally coal fired, it was decided to convert them to oil firing using No. 3 fuel oil, thus permitting a common fuel supply for the boilers and the new diesel generators. A National Airoil Co. system supplies oil to the new burners installed in the base of the boiler. In starting up the boilers, a 15-volt motor-driven pump supplies oil at sufficient pressure for mechanical atomization. After sufficient steam pressure is raised, a small steam-driven pump supplies the oil to a steam-atomizing burner, which is substituted for the starting burner. The entire oil-firing system can be operated on automatic control. Actuated by slight changes in steam pressure, the air supply, along with the amount of fuel oil and atomizing steam, is automatically controlled to hold the steam within one pound of the desired working pressure.

For the additional power requirements, a General Motors diesel-driven 290-kw. generator was installed in the existing engine room. A new switchboard was installed, and power distribution circuits were provided to the 13 new electric motors, ranging from 150 to ¼ hp.

At the bow or digging end of the dredge two of the original anchoring spuds were removed entirely and the existing steam-driven spud hoisting engines were converted to operate two anchor lines from the forward end of the dredge. These lines are controlled directly by the digging operator and permit him to move the dredge sideways and, when worked in conjunction with the two stern anchor spuds, permit the dredge to be walked forward or moved in any direction.

The operator's controlhouse was relocated at the extreme forward end of the dredge on the upper deck, where the entire digging operation can be observed, with a view of the buckets and the anchor lines. In addition, a new electrical controlhouse was erected amidships at the point of the highest elevation. From this point one man can control the four outboard conveyors, the sand elevators, and the shaker screens, together with their loading conveyor.

To make the 4,000-mile water trip from Pittsburgh to Philadelphia, extensive preparations were required.* In order to lighten the dredge for the ocean voyage the 90-ft.-long digging ladder with its 76 buckets, the smoke stack, anchor spuds and three strings of elevating buckets were removed, along with all other loose material on the dredge. These were shipped by rail to Dravo's Wilmington Yard for final installation. To protect the house structure from heavy seas, a sloping wooden sheathing was erected on three sides. Two layers of 2- by 10-in. planking were laid on 6- by 6-in. framing timbers on 5 ft. centers. This framing was heavily braced by diagonal 6- by 6-in timbers, with the entire structure bolted firmly to the hull and the steel superstructure framing. All joints were caulked for water tightness. In addition to this wooden sheathing, the digging ladder well and the ladder opening in the forward bulkhead

*See PIT AND QUARRY, April, 1948.

(*Continued on page* 106)

the plant operator

PIT AND QUARRY

by WOLF G. BAUER
Consulting Engineer

DRYING PROBLEMS IN THE LIME AND ALLIED MINERALS INDUSTRIES
PART IV. ROTARY DRYER ELEMENTS

another PIT AND QUARRY exclusive

IN THE various nonmetallic mineral industries, the rotary-type dryer is probably the best-known and most widely applied drying device. Despite this almost universal application, many operators obtain anything but high efficiency of drying, heat usage, correct design and adaptability and reasonable control. A large number of operators, in fact, are unaware of the efficiencies obtainable with this equipment, the latitude of design alterations possible and the several ways in which the dryer performs its functions. The rotary dryer has not earned this universal appeal or adoption for nothing, as it may be adapted to agitated-bed surface contact convection, indirect heat, through-bed convection, and even gas-entrainment drying techniques, all four being operative in some dryer arrangements.

Several chapters will therefore be devoted here to aid the operator in obtaining smoother operation, lower fuel and power costs, and better control.

As a general premise, the economic balance discussed in earlier articles should always be applied first, before laying out a drying system, for the balance of depreciation cost against fuel, power, and maintenance decides the design features of the drying system. This requires a knowledge of the drying behavior of the particular material, as well as limits of control, output, and thermal efficiencies that may be expected from the many arrangements from which to choose.

EXTERNAL ELEMENTS

In its simplest form, the rotary dryer consists of a steel cylinder from 10 to 100 feet in length, and from 3 to 10 feet in diameter. The shell is girded by two or more steel tires or rings riding upon sets of wheels or supporting rollers. The cylinder, which may be anywhere from ¼ to ¾ in. in thickness, may be set in a horizontal position, or it may be inclined up to 1 : 15 slope.

The Cylinder The cylinder is rolled from mild steel, although special heat- and abrasion-resisting alloys may be employed. In the drying of certain salts, corrosion is particularly severe, often only in certain zones of the dryer. In such cases the cylinder may be made of steel rolled with a bonded lining inside of monel metal or nickel alloy plate. Ceramic or cement gunite coatings are also used to inhibit such corrosion. For high-temperature duties, refractory blocks may be employed. Monolithic refractory linings are generally too easily disturbed, as they cannot be keyed into the shell for the purpose of withstanding vibration and shock, either physical or thermal.

Most of the modern shells are butt-welded on both sides in staggered sections, the longer supporting cylinders being further strengthened with supporting rims of near-square cross-section at uniform intervals. At the locations of tires and gears, the shell may be stiffened and reinforced by one or more additional plates, or the shell may be of thicker plate at those points for greater heat conductivity and strength.

The Riding Rings Riding rings or tires are generally cast steel, either hollow sectional, perforated, or solid. They may be forged of high-carbon steel for the heavier installations. Rings are mounted on spacer blocks to reduce heat transmission from shell to ring. The larger units may be of the floating type, as in kiln construction. Under certain temperature conditions, as for instance in the externally-heated shell type, these tires may be cast similar to sprocket or pulley wheels, allowing a minimum of heat to travel to the rim through the spokes.

The tires are usually machine-faced, as well as being provided with machined sides for accurate thrust-roller contact. Tire faces should be wider than those of the rolls or rollers in order to allow for lateral adjustments. This face-width relationship makes for uniform wear of rolls which revolve more often and therefore wear more quickly. Tires are now also made sectional for easier replacements.

Supporting Rolls These are generally cast steel for dryers, the metal being of a grade used for railroad car wheels, and chilled. Although weights in dryer practice seldom approach those in rotary kiln construction where solid forged steel rolls may be employed, certain dryer installations would be benefited by the use of wheels or rollers fitted with high-carbon forged steel rims or tires on the wheels.

The cradled double-roll (four rolls per tire) is being displaced more and more with single sets of rolls, as this arrangement facilitates the lining-up or skewing-up for the training of the sloping cylinder to ride uphill, thus relieving the thrust rollers.

Journals generally run in bronze bushings, often only bushed in the lower half segment, although modern practice frequently suggests the use of roller anti-friction bearings. Extreme heat may require water cooling, although manufacturers provide oil cooling and oil splash lubrication through the attachment of oil lifting cups to the shaft. Dust tightness is to be stressed, as well as radiant heat shielding from the dryer shell.

Although the carrying rolls are set often on a slight pinch or angle to cause the tires of the dryer to float freely wtihout allowing the full thrust of the machine to come to bear against the thrust roller, this is a questionable expedient and mainly justified when this roller thrust bearing is not designed to take the full horizontal component easily. Less slippage, uneven wear, and power loss is produced when tires and rolls are parallel and normal, and when the thrust roller has been designed and built sufficiently large, and is mounted correctly to take this thrust. With such a heavy thrust bearing, the horizontal component of the inclined dryer is exerted against lubricated bearings instead of being applied with higher friction loss on misaligned rolling surfaces.

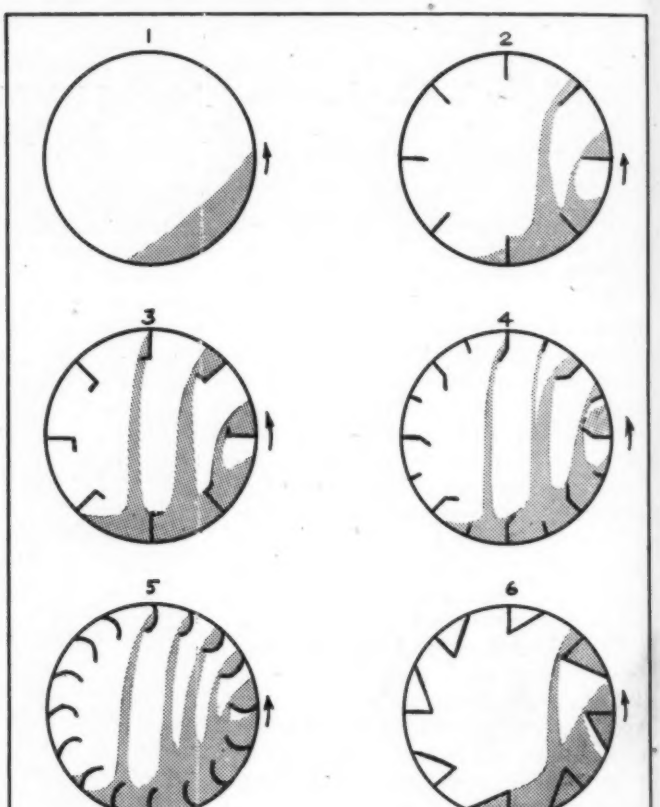
In that connection, the best design for thrust rollers is that which presents a tapered or conical rim to the machined side rim of the girth tire, as this eliminates the frictional losses due to the differential lineal speed of the inside over the outside section of the riding ring rim. Thus the construction is similar to that of right-angle miter gears.

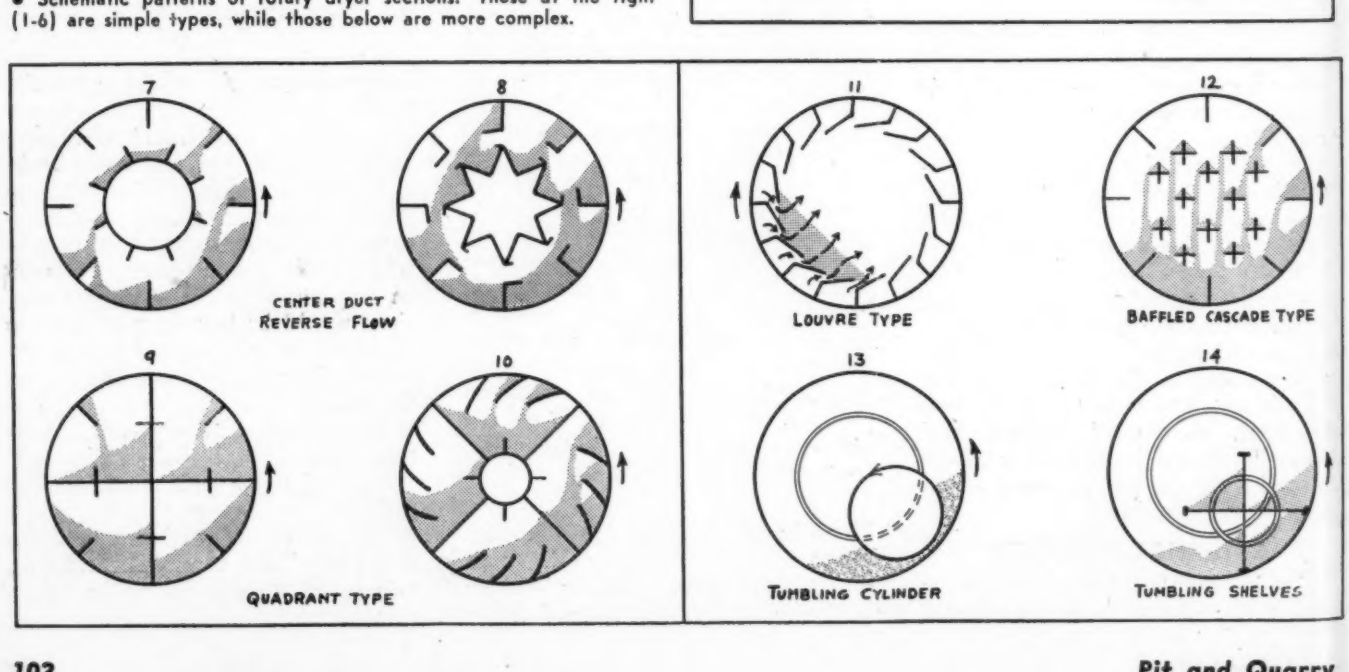
Drive There are three ways of turning a rotary dryer, namely by a ring gear and pinion, by ring sprocket and chain, and through the friction of oversize supporting rolls on the tires. These methods have been listed in the order of most usual application, the girth gear and pinion being by far the best adapted, especially for the larger diameter shells.

The girth or driving gear is generally sectionalized, and may be of cast iron or cast steel, driven by cast-steel pinion. More often the pinion is a cut-steel and machined gear, and sometimes, under severe conditions, the ring gear may also be cut steel. The gear is mounted either rigidly through a hub and spokes, steel brackets, or directly to the shell. The gear may also be bolted to flat steel straps extending tangentially from the shell at intervals around the periphery of the cylinder, acting as expansion joints, providing flexible and positive gear meshing.

Gears are usually dipping in heavy gear oil, and are then covered by a dust-protecting cover. In some instances, a splash wheel or idler pinion running in an oil bath may keep the teeth lubricated, while at rare times the gears are purposely run dry or with graphite coatings.

Gears are generally placed in the proximity of the riding rings at the cooler end of the dryer in order to create least torsion and strain on the shell, bring on minimum whip and vibration, make use of a common supporting base and foundation, and share the heavier shell





• Schematic patterns of rotary dryer sections. Those at the right (1-6) are simple types, while those below are more complex.

construction at this point.

When the cylinder is driven by sprocket and chain passing around the shell, no special expansion provisions are made, the chain slack providing some cushion against irregularities. The simplest chain drive calls for the attachment of a simple smooth ring or hoop around the cylinder without teeth, the chain obtaining traction by friction alone, the pinion sprocket being toothed. The chain tension can then be increased by pivoted idler sprocket. Some operators or builders weld small lugs or teeth at spaced intervals directly on a girth strap around the cylinder. Cast sectional girth sprockets are also used, but are not necessary.

Driving the cylinder through the supporting rolls is probably the simplest type of drive arrangement. Under certain conditons, such as small loads, large-diameter and wide-faced rolls, and horizontal or small-inclination cylinders, this practice is not objectionable. All rolls should be inter-connected to act as driving wheels for balanced wear and maximum application of friction surface. Careful maintenance of the diameters of all girth tires and rolls, as well as alignments, is paramount, and these must be frequently checked.

INTERIOR CONSTRUCTION

The structural features and arrangements within the rotary dryer cylinder, which influence the movement and surface exposure of the solid, are many and varied. They depend on material properties such as hardness, abrasiveness, toughness or fragility, conglomerating or free-flowing tendencies, angle of repose, mass sliding or rolling action, stickiness or freedom from adhesion, resistance to quick temperature changes, changes in weight or size during drying, nature of the contained moisture, i.e. absorbed-surface-pore-chemical water, as well as particle size and range.

Aside from considerations reflecting physical and chemical characteristics of the material itself, the design of shell interior is dictated by general processing requirements such as direct or indirect heating, gas and air control, need for drying efficiency, space requirements, corrosion protection, limits of heating rate, final moisture content, maximum temperature, recirculation of wet air or gases, and the need for possible integral cooling.

The rotating cylinder serves the purpose of moving and conveying the material mechanically along the heating and drying path, the rotational action tumbling, lifting, showering, rolling, cascading, and mixing the solids for maximum exposure to heated gases or heated surfaces. The cylinder itself acts, of course, also as a single or multi-pass gas passage.

Lifting Flights The simple rotation of a smooth and bare shell will tumble and roll fairly coarse and closely-graded particles, whereas certain finer sizes will simply carry up and slide down *en masse* from the up-moving wall with little resulting intermixing and surface exposure. By attaching the standard lifting flights, the material may be showered through the drying gas stream for intimate gas-solid contacting. These lifting flights may, by their size and shape, gently cascade the material for short vertical free space drops along the up-moving wall, or may bring about a complete utilization of the dryer cross section, causing maximum drying to take place while the material is in suspension.

The angle or pitch of these flights must be designed according to the sliding angle of the particular material. Since the moisture content may easily vary this angle, flight pitch and size can also be changed along the axis of the dryer from one end successively to the other in order to maintain optimum showering conditions. Often the increased dryness brings about dusting and dust losses, thus necessitating shorter fall or cascading distances. This again depends on whether the system is parallel or counterflow.

In counterflow practice, or in systems using reverse flow of gases in the cylinder, fine dry dust particles may be re-deposited on wet incoming material and recovered. In parallel flow practice, the fine dust is often carried out of the dryer ahead of coarser particles, due to the differential free-falling rate of various sizes and densities. Generally this is not detrimental, as thereby the quickest drying particles are also retained for a shorter time in the dryer.

Flights or lifters are generally welded or bolted to the shell parallel to the cylinder axis. In the simplest form, they consist of angle iron or sheet iron blades equally spaced around the circumference. They may be long or short, axially in line, or successively staggered. They may be strengthened by stiffening gussets above or below, crimped at the lips for strength, or curved throughout. The flight surface may have more than one plane angle, so that material will slide off over a considerable rotational angle of the revolving cylinder, or slide off at two or more definite rotational positions onto other flights or the central drum. The flight blade edges or lips may be notched so that the stream of material sliding off will be further divided and broken up.

Aside from center tube or reverse-flow dryers in which material is made to contact heated metal surfaces on top of the central drum fitted with retaining flights, intermediate flights or baffles can be interposed into the center free space for increasing not only surface exposure, but also *material retention time*. Another arrangement is to divide the dryer cross section into several quadrants by longitudinal compartmentation which, in effect, create several smaller parallel dryer ducts. Such an arrangement has also a load-balancing effect, and will reduce power for rotating the cylinder under load. Some of the various design patterns are shown in the illustrations.

Conveying Flights Conveying flights at the feed end of rotary dryers serve the purpose of expediting the incoming material toward the interior of the cylinder, and preventing the use of gas-constricting dams for back-spillage reasons. These flights are arranged in spiral form, extending several feet into the dryer. Material that is sticky and not free-flowing is not too well adapted to such technique.

Special Features Under certain conditions, conveying and drying aids must be added to standard equipment. Slurries fed to rotary dryers can be handled either by scrapers and plows or by a loose chain system. Either means will break up the caked fluid so that it can be passed along the cylinder in solid lump form for finish drying.

Tumbling cylinders or multi-sided prismatic steel boxes fitted with a rubbing ring at the lower end, may be positioned in such zones of the dryer in which their action helps to smash and break up lump formation and inhibits case hardening.

Process requirements may necessitate integral cooling, and the cylinder may be provided with an airlock about two-thirds of the way down from the feed end. By using baffled openings in the shell in conjunction with a plenum gas-collecting chamber, cooling air can be pulled through the cooling section. The material is conveyed across this perforated shell section in enclosed spiral ducts. The hot and wet gases

and the cooling air may be withdrawn from this transition dryer-cooler section in one fan, or two separate fans may be used. In the latter case, the drying section is best fitted with a central hot gas duct for gas reversal, and the cooler section is blanketed off with a steel partition for separate cooling air and drying gas removal.

In the following issue, construction and function of external seals, hoods, feeders, ducts, fans, cyclones, etc., for rotary dryer systems will occupy our attention.

Modernized Gravel Dredge

(*From page* 100)

were plated over temporarily. The two sections of the hull on either side of the digging ladder well were tied together by two heavy steel beams, one on the deck and one under the bottom of the hull. Heavy wooden X-bracing between the beams in way of the digging well provided a shear connection and completed this clamp-like arrangement. Upon completion of all these preparations, the dredge presented a rather strange sight, somewhat resembling the old Civil War gunboat, *Merrimac*.

The *Franklin* left Neville Island on November 1, 1947, in a mixed tow of the towboat *Peace* and arrived at New Orleans 19 days later without incident. For the long ocean trip the dredge was towed digging end aft on a long hawser behind a sea-going tug. The sea voyage was rather uneventful. Several small storms were encountered, but only one was of sufficient intensity to cause the dredge to seek shelter. When the weather cleared the trip was completed without further trouble. At the Dravo yard in Wilmington, Del., the items of equipment which had been shipped overland were installed.

Equipped with a 90-ft.-long digging ladder, the dredge will dig to a depth of 50 ft. below water level, elevating over 500 t.p.h. of material from the deposit. Each of the 76 digging buckets weighs over 1,000 pounds and will hold 7 cu. ft., or a third of a ton of material. The material is brought up and dumped into a 6-ft.-diameter, 29-ft.-long rotating screen, where the initial separation takes place.

All gravel under 6½ in. is diverted to the gravel elevator vat, all over this size being wasted back to the river. Two sizes of sand are separated out, each flowing to a separate elevator settling tank. At this screen, fine sand can be blended into the coarse as required.

The gravel is then elevated and dumped on the 42-in. conveyor, which carries it to the triple-deck gravel grading screens. The bottom decks of these screens are provided with two sizes of screen plate. The first section of the bottom deck passes sand and the next section passes pea gravel. Between the screens and the new "mousetrap" following it, practically any size of material can be sent anywhere. Ordinarily the oversize from 2¼ to 6½ in. off the top deck of the screen is sent to the new cone crusher. Pea gravel passing the lower deck can be loaded; normally is it diverted back to be blended with the 1½- and ¾-in. gravel retained on the second and third decks. The fines passing the bottom deck are usually returned to the sand vats *via* the main screen. The two desired sizes of gravel are then loaded in separate barges on the 24-in. conveyor belts. The discharge from the cone crusher is dumped back into the gravel elevator vat and is re-elevated with the natural gravel coming off the main revolving screen.

On the sand side, the two new enlarged vats will aid in settling out the fine sand. Partitions and baffles slow down the flow of sand-bearing water coming from the main revolving screen. At the discharge end of both vats, the water empties into a new sea chest arrangement whereby all or any portion of this sandy water can be recirculated through the new 8-in. sand pump back to the spray lines in the main revolving screen, a complete circuit if desired. If clean water is needed, the sandy water may be wasted at the sea chest and clean water supplied to the pump.

By means of the two sand elevators, using 3⅞- and 2-cu. ft. buckets, the two grades of sand are elevated and dumped on two 24-in. conveyor belts which load the two sand barges.

The dredge *Franklin* is now digging near Morrisville, Pa., on the Delaware River, working its way into the bank toward Van Sciver Lake where the main Warner Company dredging operation takes place. After having served a normal production life of 20 years the *Franklin* is now starting on its second life span, this time in the service of the Warner Company to meet a record demand for quality sand and gravel.

JOHN W. BROWN was recently appointed general sales manager of the National Gypsum Company, and JAMES J. RYAN was named to the newly-created post of general commodity manager.

Mr. Brown, who will work out of the Buffalo office, joined National Gypsum in 1935. Since 1941 he has been sales manager of the Dallas district.

E. F. GOODNER has been named executive vice-president of the American Gilsonite Company of Salt Lake City, to succeed C. F. HANSEN, who was recently made president of the Calmara Oil Company.

Mr. Goodner was formerly general manager of the California Asphalt Company at Portland, Ore. He will make his headquarters at Salt Lake City.

R. F. DIERKING of Des Moines, Ia., has been appointed manager of West Central Offices of the Portland Cement Association, according to an announcement made by Carl D. Franks, the association's vice-president for promotion. Mr. Dierking will succeed R. W. WINTERS, who resigned. Mr. Dierking's headquarters will be in Kansas City, Mo. He has been district engineer in charge of the association's office in Des Moines since 1937. In his new position he will direct association field work in Colorado, Kansas, Missouri, Nebraska, Oklahoma and Wyoming.

FRED F. LOY, who has been an association field engineer in Iowa for the past 11 years, has been appointed Iowa district engineer to succeed Mr. Dierking.

Mr. Dierking has been a member of the association staff for more than 20 years, serving as field engineer in Arkansas and Missouri until he became district engineer in Iowa. He studied civil engineering at the University of Missouri and before being employed by the Association worked for the Missouri State Highway Commission. He is a veteran of World War I and an active member of several engineering societies.

Mr. Loy, who joined the association staff in 1937, spent more than 3 years

as an officer in the Corps of Engineers, U.S.A., serving with distinction in World War II from the Normandy landing until 1946. He was retired to inactive duty with the rank of major. He is a civil engineering graduate of the University of North Dakota, a member of the Society of American Military Engineers and several other engineering associations.

PHILIP E. CARLSON has been appointed plant engineer and supervising chemist at the Lehigh Portland Cement Company, Buffalo, N. Y., plant. After completing his training at the University of Minnesota, he was employed by the Minneapolis-St. Paul Sanitary District. During World War II he served in the United States Navy as a diesel specialist. He has been associated with Lehigh at Buffalo since 1946.

WILLIAM A. HERBSTER JR. was recently named chemist at the Lehigh Portland Cement Company's plant at Sandt's Eddy, Pa. He succeeds H. M. DICKENSHIED, retired. Mr. Herbster has been employed by Lehigh since 1937 and worked for some time at the Ormrod, Pa., plant.

Mr. Dickenshied became chemist at Sandt's Eddy in November, 1925, when the plant was opened. He began his association with the company in 1905, and served in various capacities in Fogelsville, Pa., Mason City, Ia., and Ormrod. At Ormrod he was assigned the duties of analyst in the laboratory, a post which he held until he went to Sandt's Eddy in 1925.

JOHN W. SNYDER has been appointed to replace the late Donald F. Cranor as technical director of Binney & Smith Company, New York City, manufacturers of talc, carbon blacks, colors, and related products. Mr. Snyder has been a member of the firm's research and development department since 1927.

MONROE RULE has been made manager in charge of operations at the National Gypsum Company's lime plant at Kimballton, Va. Mr. Rule has been associated with the lime and gypsum industries for the last 25 years, and has been employed by National since 1942. He has served as plant engineer at the company's Fort Dodge, Ia., plant and as manager of the Saltville, Va., operation.

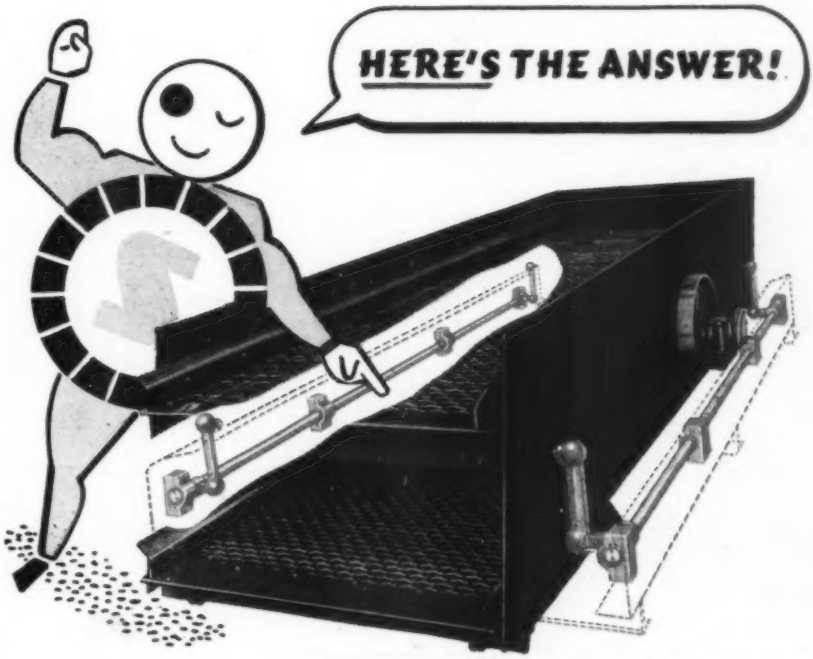
JAMES O. WINSTON JR., of Rowles, Winston & Company, Houston, Tex., has been elected a member of the board of directors of the Freeport Sulphur Company.

IVAN KRABBE was recently appointed general manager of the National Portland Cement Company, according to an announcement from the officials.

GEORGE E. KOCH, formerly works manager of United States Gypsum Company, has been appointed plant manager of American Acoustics, Inc., manufacturers of acoustical tile and insulation plaster.

WHY!

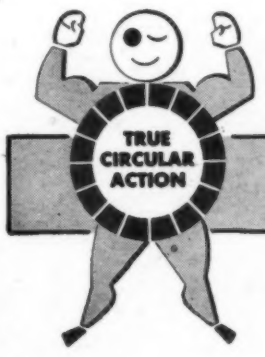
more tons per hour with Seco vibrating screens



•SECO'S PATENTED EQUALIZER ASSEMBLY

This Seco engineering exclusive *connects* the live screen body to the base frame at four points. Result, in operation, is a fully controlled true circular action that pays off in greater screening efficiency. Not only more tons per hour, but smooth, trouble-free performance is yours with a Seco Vibrating Screen. Seco builds over 250 models. Used and preferred on thousands of tough screening jobs coast to coast.

Write Dept. L for A Guide to Better Screening



SECO

SCREEN EQUIPMENT COMPANY, INC.
·PRODUCERS OF VIBRATING SCREENS EXCLUSIVELY
Buffalo 21, New York
In Canada: United Steel Corp., Ltd., Toronto

SAVES $5000 IN SIX MONTHS

G-E DIESEL-ELECTRIC LOCOMOTIVE SLASHES FUEL COSTS BY 89% AT TEXAS PAPER MILL.

When the Southland Paper Mills put this snappy 45-ton diesel-electric locomotive into operation at the Lufkin, Texas plant last December, the company did so on the strength of a modest savings estimate of $15 a day made by G-E engineers. Since then this cost-smashing locomotive has almost doubled this estimate *in just fuel savings alone.*

During the six months it's been in operation the diesel-electric saved $5000, at the rate of $27.65 per day. This is based on the $3.35 per day fuel cost for the G-E 45-tonner, compared with the daily $31.00 cost of bunker fuel oil for the oil-burning steamer.

FIRE HAZARD ELIMINATED

In addition to savings, the locomotive has furnished these other benefits. In and around the plant the absence of sparks has reduced the danger of setting paper and pulp wood on fire. There's no longer any need to take time for watering. No watchman is required to maintain a head of steam.

Eight hours a day, seven days a week, this peppy locomotive switches cars at the push of a button, often handling 15-car strings weighing over 1200 tons and on occasion pulling as many as twenty loaded cars.

YOUR SAVINGS ESTIMATED

If you want to cut costs in your own plant, find out for yourself how many dollars one of these locomotives will bank for you each year. Without obligation we'll make a survey of your switching requirements, estimate your savings in advance. Phone your nearest G-E representative today. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

ANNUAL INVESTMENT RETURN—32%!

HIGH AVAILABILITY

These diesel-electric locomotives are available for work 90 to 95 per cent of the time. This means you can have 8000 hours' operation out of an 8760-hour year.

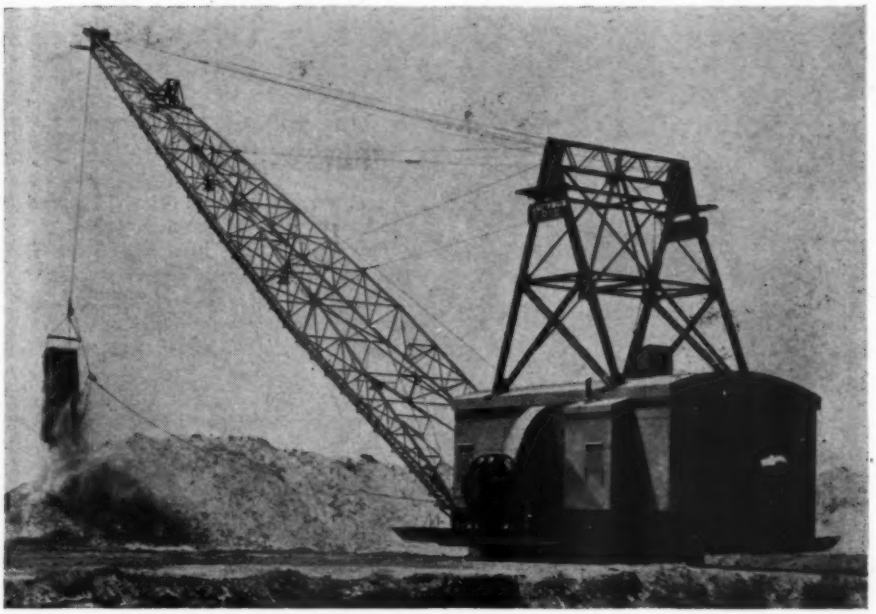
Switch to GE Diesel-electrics *And Save!*

GENERAL ELECTRIC

120-60

new machinery and supplies

PIT AND QUARRY



Engineered for the jobs where profitable operation requires sustained delivery for big yardages day-in and day-out, the new Bucyrus-Erie 450-W walking dragline is a large-capacity, long-range machine. It swings 8- to 10-cu. yd. buckets from 200- to 165-ft. booms. With an 8-yd. bucket, it can move material 407 ft. without throwing the bucket. Bucyrus-Erie Co., S. Milwaukee, Wis.

● New Earth Mover

R. G. LeTourneau, Inc., Peoria, Ill., has announced the addition of the new Model C Tournapull to its line of high-speed earthmoving equipment. This rubber-tired unit is designed and built to answer the need for a medium-sized, high-speed earthmoving tool.

The new Tournapull is used with the Model E16 Carryall scraper which has a capacity of 13.3 cu. yds. or 16 tons. This unit, which is powered by a 150-hp., 6-cylinder diesel engine, has four forward speeds, ranging from 2.19 to 17.3 m.p.h.

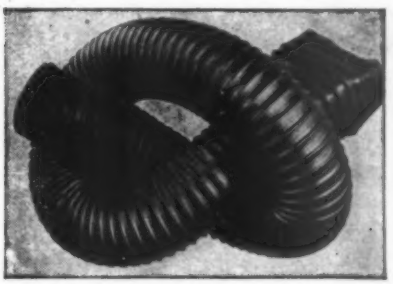
One of the developments included on the new C Tournapull is electric control of Tournapull steering, scraper bowl, apron and tailgate by individual electric motors. These Tourna-torque electric motors, which were specifically designed and built by LeTourneau to handle heavy construction work, are a new type a.-c. motor with the lugging characteristics of a d.-c. motor. Source of electrical current for these motors is a 240-volt, 120-cycle a.-c. generator built in line with the Tournapull engine. A feature of these generators is the revolving field which requires low excitation voltage, thus reducing arcing and power loss at the brushes. Steering and scraper operations are controlled through these motors by means of toggle switches.

● Industrial Hose

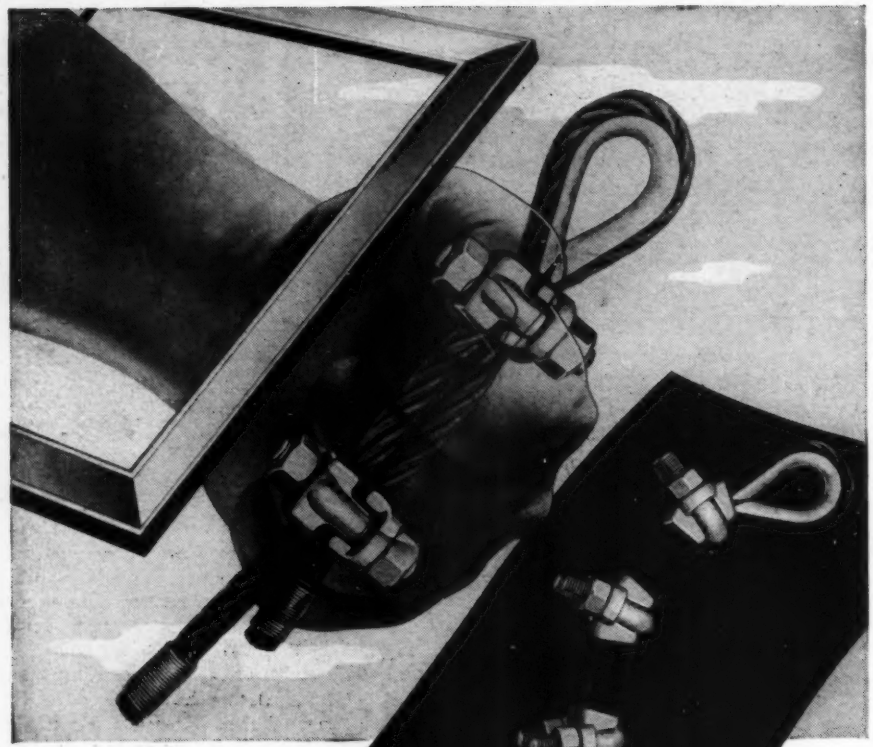
The American Ventilating Hose Company, 15 Park Row, New York 7, N. Y., presents three products — "Flexaust" spiral wire reinforcement for suction or blowing, "Portovent" wire ring reinforcement, and "Bloflex" for blowing only—all accessories for increasing the utility of ventilating hose.

All three of these products are made with neoprene base compound, unless otherwise specified. Steel wire reinforcements are used in all standard products.

Flexaust is made in several types and sizes, including sectional lengths and coupling boots. Portovent is made in 2½-ft. sections and is designed for dust,



fume and ventilating applications involving pressure or light suctions and where portability and small storage space (when not in operation) are primary considerations. Bloflex is made from neoprene coated cotton fabric in 100-ft. lengths. Sizes over 10-in. diameter are made with two pieces of fabric providing



KNOCK
ROPE TROUBLES
OUT OF YOUR PICTURE
...WITH THE LAUGHLIN

"FIST-GRIP" SAFETY CLIP

Only The Laughlin "Fist-Grip" Safety Clip Gives You Service and Protection Like This:

Won't Crimp or Crush . . . rope lasts far longer

Simple, easy to put on . . . saves time, manpower

100% Foolproof . . . can't go on backward

Super Grip . . . two clips do the work of three

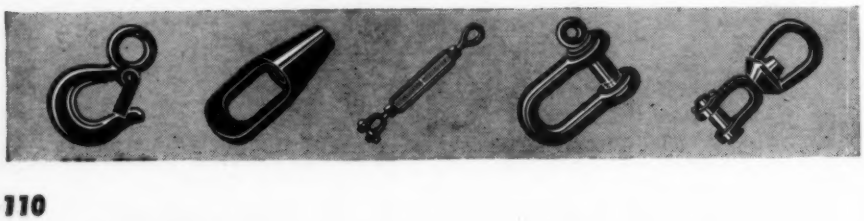
Extra Strength and Safety . . . entire clip, including bolts, drop-forged

"Fist-Grip" Clips develop 95% to 100% of the rope strength. They can make important savings in time, money and rope . . . for *you*. Distributed through mine, mill and oil field supply houses. WRITE FOR LAUGHLIN'S CATALOG #140 . . . up-to-the-minute data on industrial fittings.

THE THOMAS LAUGHLIN CO., DEPT. 3, PORTLAND 6, MAINE.

LAUGHLIN

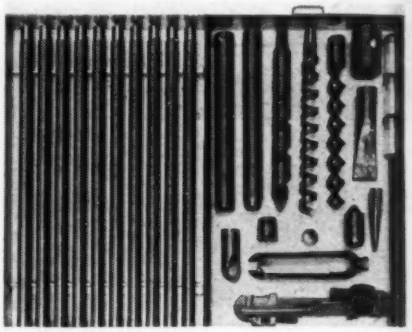
THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS



two opposite seams for easy vertical as well as horizontal suspension. Various accessories and attachments can also be supplied. The American Ventilating Hose Company, 15 Park Row, New York 7, N. Y.

● Sampling Kit

The Acker Drill Company, Inc., Scranton, Pa., has recently added to its power core drills and test boring machines a soil sampling kit for manual



operation. It is made up of 12 different earth augers, soil sampling tubes, chopping and jetting bits and subsurface probing tools. In the steel box are 10 drill rod sections, 2 to 6 in. long, each made of cold drawn seamless steel tubing and having square threads and flush joints.

This collection of sampling tools is said to cover almost all conditions likely to be encountered in subsurface investigations. The samplers are widely used to determine subgrade conditions for highways, airfield runways, sewer lines and soil stabilization projects.

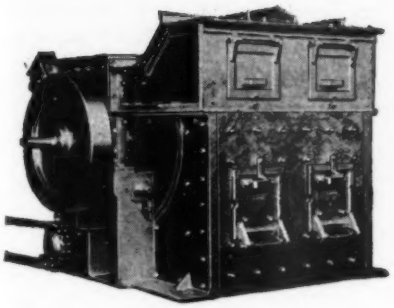
To withstand hard driving by sledge or heavy mall, the steel tubing drill rods have a heavy shoulder. Cutting shoes are of hardened, heat-treated steel. The complete kit can be conveniently placed in any automobile.

● New Hammermill Line

Headlining the features incorporated in the new improved "36 Series" Dixie hammermill is a longer, continuously-moving breaker plate which guards against the passage of oversized materials between the breaker plate and the front cage bar.

The extension of the moving breaker plate results in improved grinding control for uniformity of product and sets a high standard of crushing efficiency, particularly in the reduction of wet, sticky material, the manufacturer claims. As an extra precaution against restricting the flow of material, added space has also been provided between the cage bars and the back of the mill.

Other changes in the new "36 Series" hammermill include all-steel construction for greater strength and longer life. Flange-type end discs of all-cast steel protect hammer bolts and nuts from wear at the ends. The heavy flywheel exerts a stabilizing action that offsets the effect of momentary overload occasioned by the inclusion in the feed of unusually large pieces of raw material. Access to hammers for periodic examination is af-



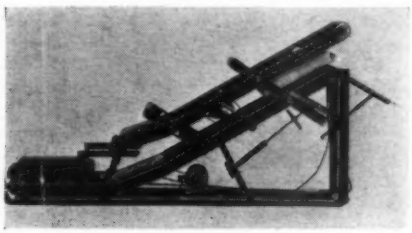
forded by a conveniently located clean-out and inspection door. Optional equipment includes a metal trap to facilitate the removal of tramp iron.

Four sizes of the mill, all equipped with Dixie's continuously-moving breaker plate, are designed for either primary or secondary crushing. Capacities range from 25 to 150 tons. The Dixie Machinery Mfg. Co., 4200 Goodfellow Blvd., St. Louis 20, Mo.

● Bag Flattener

The new "Flexoveyor" bag flattener is powered by an electric motor which drives endless steel coil springs running over grooved steel rollers. Due to the rocker arm connection between the hugger boom and lower conveyor a "kneading and pressing action" is applied by the hugger boom which is said to eliminate air from the bag and distribute the contents evenly therein. Such an action, says the manufacturer, produces a flat, smooth bag which piles more easily, stays piled and occupies less floor space.

The points at which the hugger boom is attached to the rocker are adjustable



up and down, thus making it possible to set the bag flattener to handle a bag of practically any thickness beyond that allowed by the normal floating action of the hugger boom.

The Flexoveyor flattener is available with swivel casters or pneumatic tires, or it may be used on skids. As the bags go through the machine, they are raised above the floor approximately 4 feet, which facilitates transferring to a conveyor system, stacking, or loading into trucks and box cars. The Flexoveyor Manufacturing Company, 315 E. & C. Bldg., Denver, Colorado.

● Positive Discharge Buckets

A new type of elevator bucket has been placed on the market by the Pekay Machine & Engineering Co., 100 N. La Salle St., Chicago, Ill. An unusual feature of this unit is an independent ejector plate which serves as the back of the bucket but which is attached to the belt with a separate mounting from

This is how P&H Hartop hard-surfacing electrodes cut equipment downtime, raise man-hour production, reduce maintenance costs

Here's an idler that is being hard-surfaced with P&H Hartop so that a tractor can get back to work in a hurry. The cost of doing this particular job is only $25.96, counting both labor and electrodes.

And that's the beauty of Hartop. It helps you make repairs quickly and easily. You don't have to wait for repair parts. Your machinery stays on the job longer. Your man-hour production is greater. You see, worn parts hard-surfaced with these easy-to-use electrodes outwear new parts 2 to 3 times. That is why you get more work done and your costs are lower.

The Hartop series consists of four types of electrodes — with Rockwell C hardness ratings as follows: Hartop Brown, 35 to 40. Hartop Green, 45 to 50. Hartop Red, 50 to 55. Hartop Yellow, 58 to 63.

Maintain and repair with Hartop. $4.25 buys you our trial package of all 4 types of these money-saving electrodes Get a few packages today from your P&H distributor. Or write us for prompt delivery.

P&H WELDING ELECTRODES
4451 W. National Avenue
Milwaukee 14, Wisconsin
HARNISCHFEGER CORPORATION

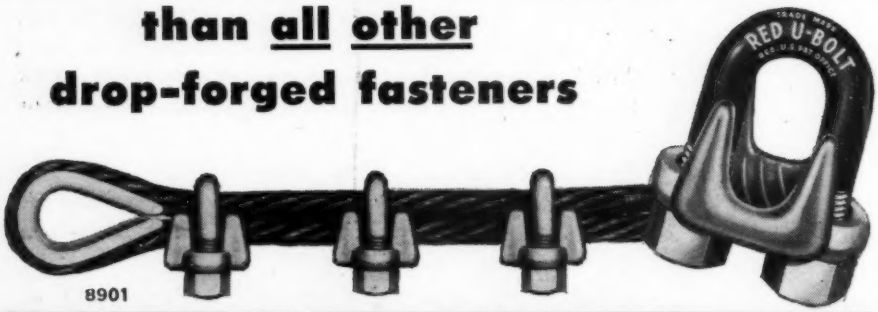
There's no point in monkeying around with makeshift wire rope fasteners, on jobs *where safety comes first.* All over the world, big jobs and small jobs are rigged with genuine CROSBY CLIPS. They're steel, drop-forged, hot dip galvanized. Correct design makes a positive "vise-tight" grip. Complete run of sizes . . . for ⅛ inch to 3 inch wire rope. Distributors everywhere. Made only by AMERICAN HOIST and Derrick Co., St. Paul 1, Minnesota.

Industry uses more

CROSBY CLIPS

than all other

drop-forged fasteners



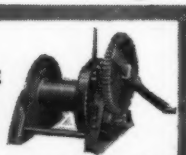
8901

For Armored Construction . . . specify

AMERICAN BLOCKS AND SHEAVES

● A complete line of wire rope blocks—all types, all sizes, in capacities from 1½ to 250 tons. Thick steel side plates, heavy pins and axles. Ask for American equipment when ordering.

ONE MAN LIFTS 10,000 LBS. WITH THE AMERICAN HANDIWINCH



● Gives one man the power of a crew. Weighs only 95 lbs. Handles lifting, loading and pulling jobs up to 5 tons. All steel construction. Ask your distributor.

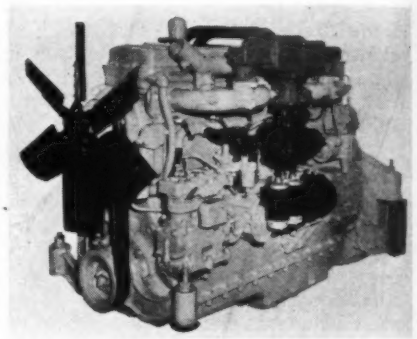
that used for the bucket istelf. As the belt moves over the head pulley, the ejector plate is pulled through the bucket, positively discharging the load.

The buckets are constructed of ⅜-in. steel plate and are available in standard sizes.

● Heavy-Duty Engine

The ACF-Brill Motors Company, Hall-Scott Motor Division, has announced its new "Series 400" truck engine, which is equipped to operate on either butane-propane or gasoline.

This power unit was designed for heavy transportation service. It is simple in design and rugged in construction; operation is said to be unusually clean. Weight of the engine is 2400 lbs., complete with standard accessories.



The three major design features are the overhead valves and overhead camshaft, permitting a semi-spherical, machined combustion chamber; twin ignition, either with 12-point distributor for straight battery operation or with battery and magneto system; and the replaceable cylinder block, fitted between the cylinder head and the upper crankcase assembly.

The upper crankcase is cast from alloy iron and has seven main bearings with forged steel bearing caps. The cylinder block is of the removable type, cast en bloc of alloy iron, as is the cylinder head. A complete valve actuating mechanism is carried in the cylinder head. The entire assembly can be removed and the valves ground on the bench.

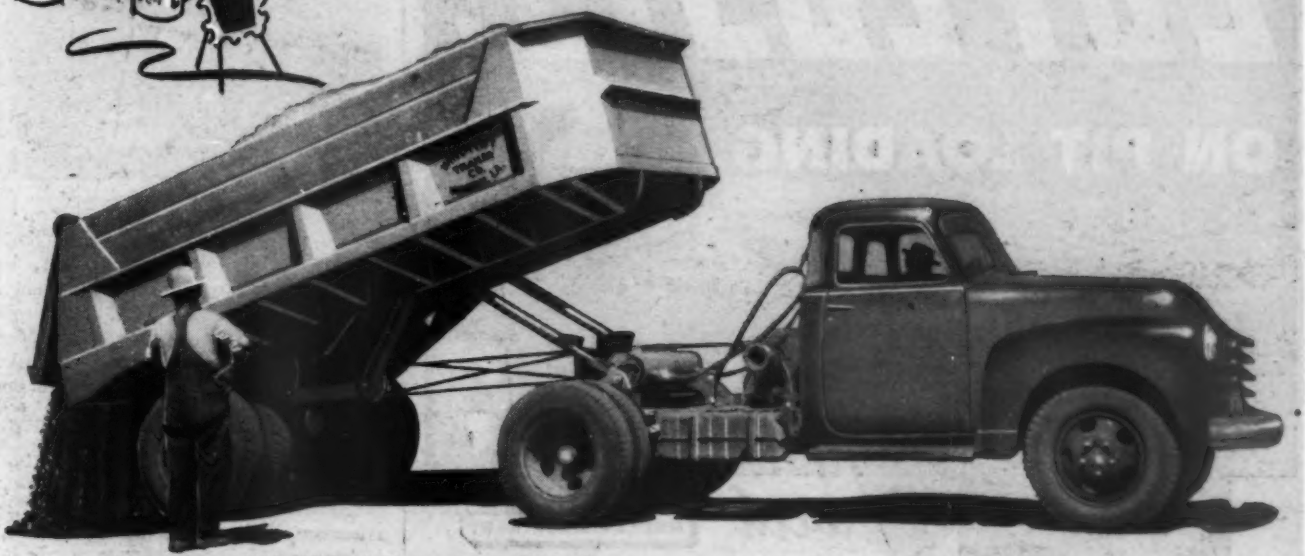
Series 400 engines begin at 295 horsepower, 5¾-in. bore, 7-in. stroke, 1,090-cu. in. displacement. The engines are applicable to varying uses and can be employed, with minor changes, as power or industrial units. Among the applications to which trucks equipped with Hall-Scott 400's have been adapted are earth moving, cement hauling, etc.

● Consultant Service

Filter Fabrics, Inc., 704 Marion Bldg., Cleveland 13, O., presents a unique service to the cement industries. It offers laboratory and consultation service to aid in the development of special dust-collection bags, and filter covers for rotary and drum-type filters. Such service aims at improvement in performance of standard equipment under unusual conditions. Where necessary, special weaves can be developed. This firm is also equipped to manufacture replacement filter bags of any material to user's specifications.

WORLD-WIDE VISITORS AT THE ARBA "ROAD SHOW" SAY THE WINCH LIFT . . . .

"Stole the Show"



More than 150,000 visitors attending the ARBA "Road Show" in Chicago found the answer to their hauling problems at the WINCH-LIFT exhibit. . . From every state and every continent . . . Asia, Europe, Australia, Africa, South America, construction men looking for something new in multi-purpose hauling units discovered WINCH-LIFT. . . Of sturdy, yet simple construction, but revolutionary in operation, this dump-trailer is designed for speed and performance - anywhere. Write today for information.

Capacities: 8 to 25 cu. yds. - Larger models quoted on request.

GREATER PROFITS
Unnecessary weight is eliminated allowing 25 to 40 per cent more pay loads.

MINIMUM EXPENSE
Few moving parts, no hydraulics or costly hoists to be repaired.

Winch-Lift INC

See your local truck dealer or write direct to

WINCH-LIFT INCORPORATED
317 First National Bank Building, Shreveport, Louisiana

● New Arc-Welding Electrodes

Four new electrodes developed for use in a wide range of arc-welding operations have been announced by General Electric's Welding Equipment Division. They are designated as Types W-60, W-61, W-62, and W-95.

The Type W-60, designed to meet the need for an electrode with a low-hydrogen coating, manganese-moly analysis, and good usability characteristics, is suitable for welding most hardenable steels where the hazards of under-bead cracking are to be eliminated. The range of weldable materials includes low-alloy, high-sulphur, high-carbon, high manganese, and similar high-tensile steels.

The Type W-61, a low-hydrogen electrode of a molyvanadium composition, can be used with either a.c. or reverse polarity d.c. to weld a wide variety of low-alloy steels. It is especially suited for welding low-alloy pipe, including carbon moly and chrome-stabilized carbon moly and new varieties of pipe considered "high tensile."

Designed to deposit extremely hard wear-resisting weld material in all positions, using a.c. or d.c., the Type W-95 is suitable for surfacing dipper teeth, drag line bucket lifts, tractor cleats, roller crusher teeth, mud pumps, impeller crane hooks, sand pumps, and sizing screens.

CUT COSTS!

ON PIT LOADING...

with MM MINNEAPOLIS-MOLINE MODERN MACHINERY

6 Forward, 6 Reverse Speeds

Is this what you want in pit-loading equipment?... *in Maneuverability?... in Big Capacity?... in Easy Handling?* If the answer is "yes", see how you can cut costs with the MM "UTIL". It has 6 forward and 6 reverse speeds—18:00-26 rear tires for extra flotation—10,000 lb. front-end capacity—special heavy Ross steering gear. These and many other features equip MM industrial tractors for *fast, profitable, easy handling* on front end loader jobs.

MM Industrial Tractors are famous for the same *dependable, economical* performance that has made MM Power Units the choice for powering crushers, pumps, screens and conveyors. MM Power Units range in size from 25 to 230 HP.

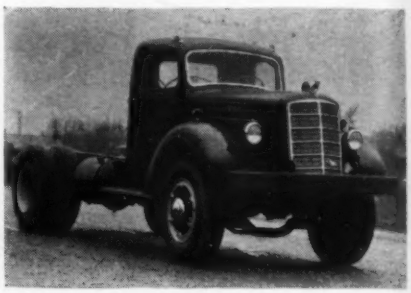
See Your MM Dealer Distributor or Write

MINNEAPOLIS-MOLINE
POWER IMPLEMENT COMPANY
MINNEAPOLIS 1, MINNESOTA

● High-Speed Tractor

A new 45,000-lb. basic gross-combination-weight tractor has been announced by Mack. Designated Model EQT, this new Mack was designed specifically for high-speed tractor operations where exceptional gradability and overall high performance are demanded. A feature of the EQT is a new 431-cu. in. Thermodyne engine. The design of the new engine is identical with the larger Thermodynes used in the heaviest Mack highway vehicles. At its governed r.p.m. of 2,500, the new engine develops 139 hp. It has the exceptionally high torque output of 330 foot-pounds at 1,400 r.p.m.

Linking the engine to the transmission is a 13⅞-in.-diameter single-plate dry



clutch with an engagement area of 202 square inches. The EQT offers a choice of two Mack-built transmissions, both matched to the new Thermodyne engine. Standard is the Mack TR-311 five-speed, direct-in-fifth transmission. The Mono-Shift TRD-311 duplex transmission, offering ten speeds in ideal graduations, controlled by a single gear-shift lever, is available as an optional extra. With the Mono-Shift, compound shifts in either direction may be made simultaneously with main-box shifts. Preselection of the compound ratios is also a feature.

Chassis construction is typically Mack. Side-members of pressed carbon-steel are joined by cross-members of the well-known Mack box-girder design, producing a rugged frame of great strength and rigidity. Mack rubber shock insulators retain the spring ends and protect the chassis from road shocks.

The EQT stresses safety throughout its design. Positive control is assured by worm and roller steering. Powerful air brakes have an area of 533 square inches. An all steel cab offers driver comfort.

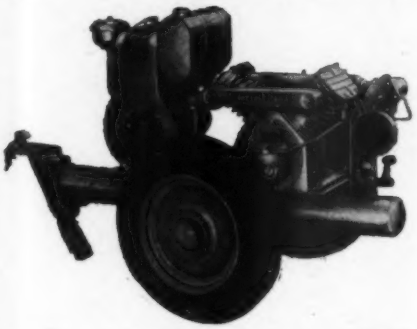
● Waterproof Pulley Lagging

Extensive research conducted by the Condersite Engineering Corporation, Philadelphia 3, Pa., has produced new all-purpose waterproof lagging. According to the manufacturers, it is quickly and easily applied without rivets, bolts, or heat, and dries within 10 hours at room temperature. It adheres so firmly to all surfaces that a hammer and chisel are required to remove it. In addition, it is weather- and corrosion-resistant, unaffected by sulphuric acid, oxidizing agents, soaps, alcohol, petroleum products, etc. When dry, it is odorless, tasteless, non-toxic and fire-safe.

• Self-Contained Compressor

The "Pac-Air" is a recent addition to Ingersoll-Rand's line of portable compressors. It is a self-contained, completely air-cooled, gasoline-engine-driven unit.

The two-cylinder, single-stage compressor has a piston displacement of



37.5 c.f.m. at 80 p.s.i. pressure. It is equipped with an automatic unloader which permits the compressor to operate at constant speed, but compresses air only when needed. The compressor and its gasoline engine drive are mounted on an air receiver which forms an integral part of the running gear. 6.00x16 pneumatic tires, and a ball-and-socket type trailer hitch make the Pac-Air easy to tow behind a truck or passenger vehicle.

When used in combination with Ingersoll-Rand's J-10 "Utility Jackhamer," the Pac-Air forms a team capable of drilling rock, masonry, or concrete.

• New Tractor Winch

Information on a new tractor winch has just been released by the American Hoist and Derrick Co., St. Paul, Minn. Called the American "Tractowinch," it is a single drum unit with a maximum capacity of 7500 lb. single line pull on the first layer of cable. Adaptable to many industrial wheel type tractors, it can be easily installed for winch work or quickly removed when the P.T.O. shaft is required for other attachments.

Among the oustanding features of the American Tractowich are: fairlead rollers, which allow a sharp offlead of the cable to either side and permit easy moving of materials in tight spots, also a hand-operated contracting band brake. A drawbar built into the winch allows the tractor to perform regular towing jobs without removing the winch.

for New protection against Old hazards ...get WILLSON

Style No. X41

GLOVE-FIT PROTECTION AGAINST SPLASH ... This Over-All* rubber goggle with snug fitting resilient rolled edge takes the danger out of splash and spatter; provides wearing comfort over spectacles.

Style No. 731

ONE-PIECE CAP CARTRIDGE ... New chemical cartridge respirator with four interchangeable cap cartridge filters protects against low concentrations of specific vapors and gases. U. S. Bureau of Mines Approved.

Style No. 750D

SETTLE THE DUST PROBLEM ... Newly approved by Bureau of Mines for all dusts. Easier breathing over long periods provided by extra large dual throw-away filters. *Reg. U. S. Pat. Off.

For complete information on these products and their application, as well as many more eye and respiratory protective devices, get in touch with your nearest Willson distributor or write us direct.

GOGGLES • RESPIRATORS • GAS MASKS • HELMETS

DOUBLE WILLSON

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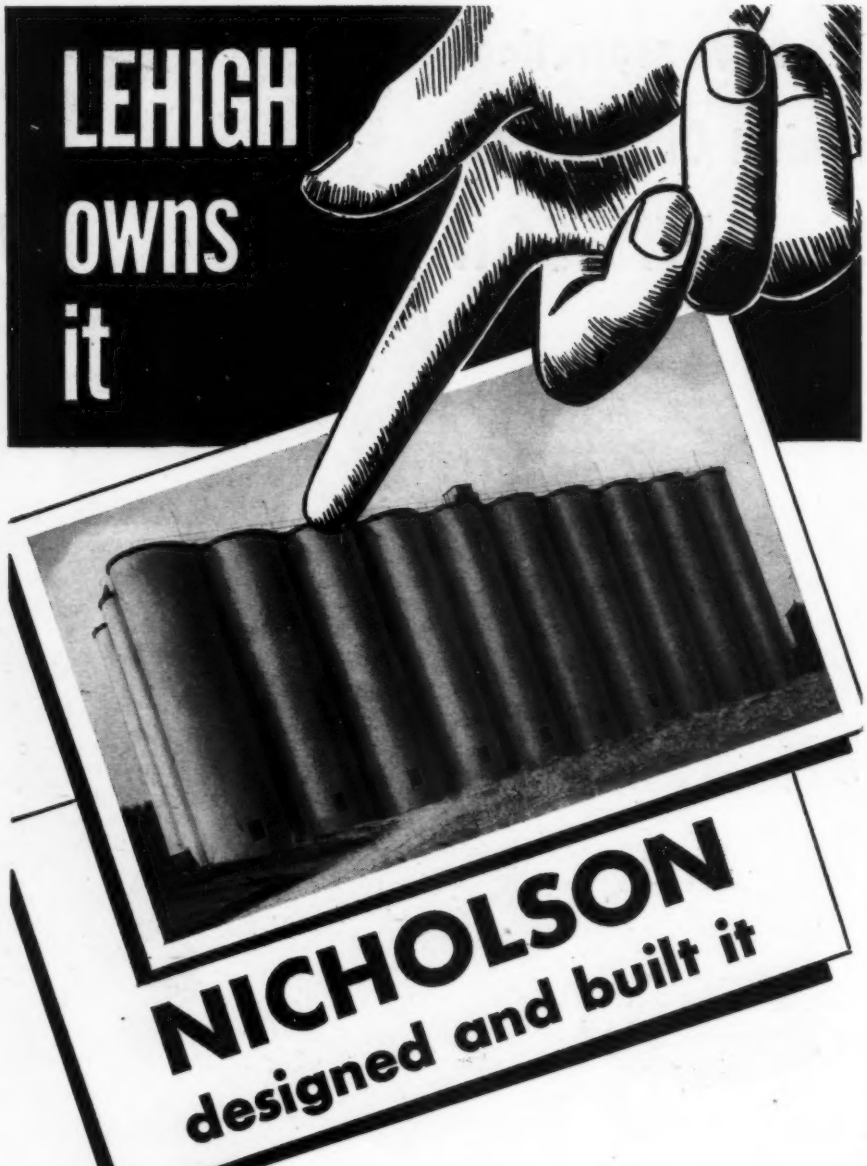

Nicholson has the experienced engineers, specializing in storage handling facilities, to design and construct storage bins of any type and any size. This 30 bin (plus) job for Lehigh Portland Cement Company at Alsen, New York is an example of a "big" project. We are just as able and willing to tackle a single bin one thirtieth the size of this Lehigh job.

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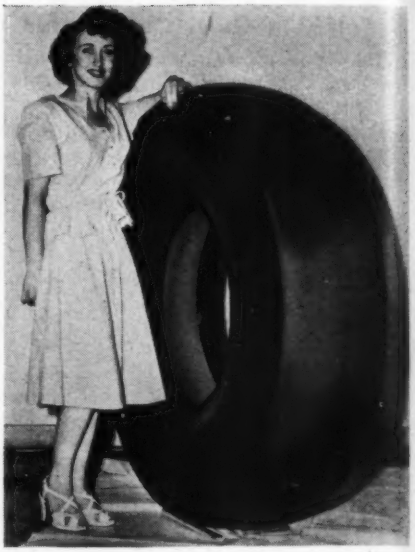
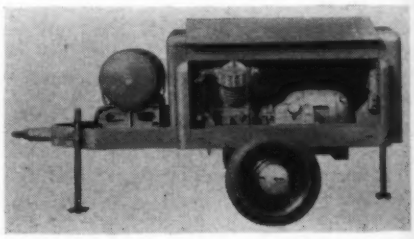


The latest product of the B. F. Goodrich Co. is this smooth contour tire, designed for rock quarry service. The advantage of this construction, say the manufacturers, is that there are no edges or tread grooves to catch on stumps, sharp rock or other hazards which may cause tire damage. The tire is recommended for free rolling wheels or for power wheels if traction is not a problem. Sizes offered are 9.00-20, 12-ply rating and 14.00-24, 20-ply rating.

● Portable Compressor

The Davey Compressor Co., Kent, O., has announced a new line of electric portable compressors in 60-, 105-, 160-, 210-, and 315-c.f.m. capacities. Available in skid, 2-wheel trailer and 4-wheel trailer mountings, the new units will be



known as "Air Chief Electrics." They will serve as a companion line to Davey's 1948 gasoline and diesel models. Compressors are of two-stage construction with inter-cooler and safety valve. They are direct driven from 1,200 r.p.m., 220/440-volt a.-c. motors of squirrel cage, horizontal type.

Motor starters are full voltage, a.-c. magnetic non-reversing, standard sheet steel NEMA Type 1, 3-phase, 60-cycle with heaters for motor protection.

● Steel Joint Welding Rod

A welding rod suitable for tight steel joints is being produced by the Eutectic Welding Alloys Corporation, 40 Worth Street, New York 13, N. Y. Called the Eutecord "16," it is $\frac{3}{32}$ in. in size and is designed for use with Eutector Flux "16." It may be used in ring form, preplaced and heated, either by torch or induction heating.

● New Clay Spade

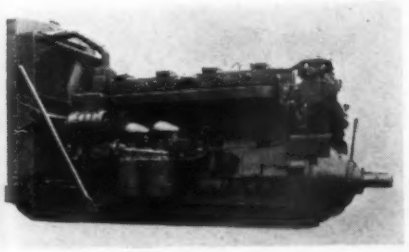
Designed for ease of holding and reduced operating costs, the new Le Roi "31" clay spade has been announced by the LeRoi Co., Milwaukee, Wis. Weighing only 18 pounds, the new Le Roi "31" is said to do more work with less effort. Also contributing to easy handling is the short, well-balanced 19-in. length.

A built-in oiling system is of primary importance to users. Oil from a large

reservoir in the handle is metered into the live air stream and carried to every working part. This lubrication system, together with a front-end sealing arrangement to exclude destructive dirt and foreign matter, increases operating efficiency and extends tool life expectancy. Drop forgings play an important part. Cylinder, handle and steel retainer have been forged to form a tough armor-clad, hard-working tool. Spacer and chuck bushings are renewable.

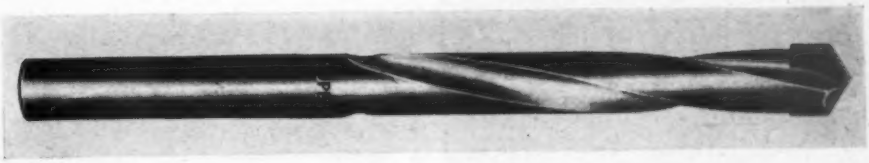
● Diesel Power Unit

A new Buda supercharged diesel power unit, Model 8-DCS-2505, is being featured by the Buda Company of Harvey, Ill. The engine has a 6¾-in. bore, 8¾-in. stroke and piston displacement of 2,505 cu. in. It is of the vertical overhead valve, 4-cycle, 8-cylinder type, full diesel, solid injection.



At maximum performance, 440 horsepower (expected, less fan) is developed at 1,200 r.p.m.; intermittent service, 370 at 1,100 r.p.m.; continuous service, 280 at 900 r.p.m. Approximate net weight is 13,240 lbs. The 4⅝-in. crankshaft is of special open-hearth steel forging, heat treated; and crankshaft bearings are of precision-type steel back construction.

The Supercharger is the belt-driven, positive-displacement type, with helical form rotors. This size of supercharged engine is also available for natural gas operation.



Super Tool Company, 21650 Hoover Road, Detroit 13, Mich., announces a new type of carbide-tipped masonry drill having spiral flutes. This new drill is designed for all types of drilling in brick, concrete, stone, etc., but specifically for deep hole work, making continuous drilling possible without removal of the drill. It is claimed that the spiral flutes carry the chips or powdered material up out of the hole, permitting free cutting without drill seizure and reducing shank bending and drill breakage.

● Portable Screening and Loading Plant

A new portable screening and loading plant for use in aggregate-producing operations in which a crusher is not needed, has been announced by Iowa Manufacturing Company, Cedar Rapids, Ia. It consists of a Cedarapids heavy-duty, double-deck horizontal vibrating screen, three folding-type channel frame conveyors and an apron feeder with charging hopper and grizzly, all mounted on a pneumatic-tired transport truck. Power required: 40 to 50 hp., with clutch and power take-off shaft, governor set at 1,200 r.p.m. full load.

This new plant will handle either gravel or rock from pit, quarry or stockpile, size it to specifications and load it quickly onto trucks, bins or stockpiles.

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Using the "straight-line" overhead loading method, the Athey ML4 MobiLoader is proving itself a cost-cutter on a wide range of jobs. This fast, simple tractor loader handles practically all materials — crushed stone, gravel, sand, earth, iron ore, clay, coal, road materials, etc.

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trade notes

R. L. Koehler

Announcing a series of major changes in the reorganization of the FWD Sales Division, R. L. Koehler, director of sales for FWD, announced that during the next year many sales supervisors and salesmen will be assigned to specialized markets.

At the company's home office in Clintonville, Wisconsin, market supervisors have been named who will be "walking encyclopedias on their own markets." All details of sales and truck developments in these individual markets will funnel through this staff of market supervisors. The following appointments have been announced:

A. E. Johnson, supervisor of government sales; C. A. Rogers, supervisor for the fire truck market; Lloyd Scheider, supervisor of defense sales; Roy Peterson, supervisor, oilfield market; C. C. Cooke, supervisor of the order department; Leo Polzin, manager of national accounts; Stanley Wick, assistant director of sales in charge of all office domestic sales activity; Jack Kelly, assistant director of sales in charge of administration of FWD's field organization.

Two new appointments were also made by FWD in its geographical field organization. John Battes has been named acting manager in FWD's Western sales zone. He fills the vacancy of Paul Schmidt, who will shortly be named to an important position in FWD's sales organization. Howard Collard, formerly sales supervisor in Oregon and Washington, has been named acting zone manager in the Southeastern states.

Pettibone Mulliken Corporation, Chicago, has purchased the assets and business of Universal Engineering Corporation of Cedar Rapids, according to an announcement made by E. Joseph Seifert, president.

Universal is one of the oldest manufacturers of crushing machinery and allied equipment for rock and gravel plants in the United States.

M. B. Garber

M. B. Garber, assistant sales manager and export manager of The Thew Shovel Company, Lorain, O., since 1937, has been appointed general sales manager. He succeeds the late Don G. Savage, who died on July 25. Mr. Garber immediately announced the appointment of Q. J. Winsor and J. T. Cushing as assistant general sales managers. Mr. Winsor previously held the position of assistant to the general sales manager and district sales manager for the East-Central territory, while Mr. Cushing has been district sales manager for the West Coast, located in San Francisco.

A Thew employe for 21 years, Mr. Garber was previously associated with the Sanderson-Cyclone Drill Co. at Orville, O. In 1927 he became a member of the Thew Sales Department and in 1937 he was placed in charge of the export department.

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H. H. Barber

Harry H. Barber, founder and chairman of the board of the Barber-Greene Company, died on September 6 at Aurora, Ill. He was 70 years of age.

Mr. Barber, an inventor of road building machinery, retired as president of Barber-Greene on September 25, 1945, to become chairman of the board of directors. He began his business career in 1907 when he joined the staff of the Stephens-Adamson Mfg. Company of Aurora, Ill., as an engineer.

In 1916 he formed a partnership with William B. Greene, who had also been with Stephens-Adamson, and D. G. McIlwraith; and in the following year the firm was incorporated under the name of the Barber-Greene Company. The first Barber-Greene machine put on the market was a portable belt conveyor. In subsequent years the self-feeding bucket loader (later to become a semi-crawler machine and then a full crawler-mounted unit), the vertical boom ditcher, the portable flight conveyor and other pieces of equipment were developed. In 1940 Mr. Barber was presented the Pioneer Award by the National Association of Manufacturers in connection with a nation-wide observance of the 150th anniversary of the founding of the American patent system.

J. S. Conway

John S. Conway, formerly export sales manager for the Koehring Company of Milwaukee, has been appointed general sales manager, according to a recent announcement from the company. At the same time, Koehring named John E. Chadwick, assistant sales manager and R. E. Stewart, export sales manager.

In his new post, Mr. Conway succeeds J. F. Robbins, who will become president and general manager of the Capitol Equipment Company, a Koehring distributor in Harrisburg, Pa.

Roy K. Ferguson, president of the St. Regis Paper Company, and a group of representative bankers, insurance men, publishers and industrialists, recently inspected the new St. Regis multiwall bag plant at Pensacola, Fla., whose output is the end product of a concentration which includes two of the most modern kraft paper mills, supported by an adjacent and long-term wood supply.

At this "kraft center", the output of the Florida Pulp and Paper Company mill, which has been in operation since 1941, has just been joined by that of the new Alabama Pulp and Paper Company mill. Both are wholly-owned subsidiaries of St. Regis.

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legal decisions

By LEO T. PARKER

Separate Taxation

Modern higher courts consistently hold that sand, gravel, rock, coal and asphalt underlying land is separately taxable, and the owners of these minerals may be assessed for taxation.

For example, in *Mitcham v. Bowers,* 188 Pac. (2d) 363, it was shown that a county had a lien on land for delinquent taxes. A person purchased this land from the county for the taxes due.

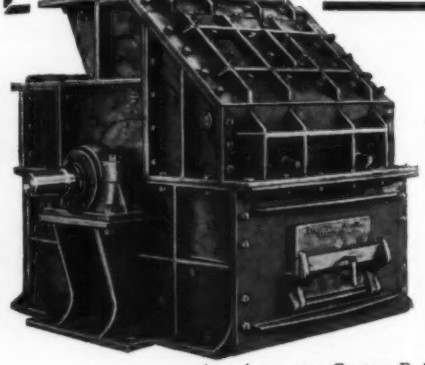
In subsequent litigation the higher court held that the purchaser did not acquire more than the upper surface of the land because the tax assessment did not include the sand, gravel, rock and underlying coal and asphalt.

Recently a reader wrote: "I took a contract from a property owner to furnish stone, other material and labor to remodel a stone house for $3,875. All my work was satisfactory except that the chimneys and fireplaces which I remodeled smoked. It was necessary that the property owner removed the chimneys and fireplaces. The property owner has refused to pay me any of the contract price of $3,875. Can you assist me to get this money?"

According to a recent higher court, this property owner has no legal right to retain the full $3,875 as damages. In other words, the contractor can recover $3,875 less the cost to the property owner of having the chimneys and fireplaces rebuilt.

For illustration, in *Alexandria Marble & Granite Works v. Harding,* 35 So. (2d) 673, reported July, 1948, these facts were proved: A property owner came to the Alexandria Marble & Granite Works' place of business and asked if the company could supply a white marble mantlepiece. The white not being available, the company's representative said he could furnish a pink marble mantlepiece. A contract was made for

AGSTONE SIZING... AT HIGHEST EFFICIENCY... with AMERICAN ACS CENTER FEED HAMMER MILLS



When sizing goes down to agstone—efficiency stays *up*—with an American Hammermill. These new American ACS Hammermills are designed with a special center feed, to lengthen the travel of the stone—and assure a higher ratio of fines. Quickly and easily adjusted to different sizing, Americans can add great flexibility and increase output on any size of operation.

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A. "Brute", for heavy duty.
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Originators and Manufacturers of Ring Crushers and Pulverizers
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the fireplace at a stated price. The company prepared the marble and took it out to her house, but found that the fireplace was the old type 24-in. brick type, while the mantel prepared was for a 34-in. fireplace. It was decided to remodel the fireplace to fit the standard mantel, which was done by the company's employees, it being understood the property owner would pay additional for this work. When the work was completed, the property owner had the fire chief inspect the fireplace. He said that the installation constituted a fire hazard. Other experienced fireplace workers agreed with the fire chief.

In subsequent litigation the higher court held that the property owner must pay the original contract price for the mantelpiece, but need not pay for the installation and remodeling. This court said: "The measure of damage suffered by an owner for defective or unsuitable materials furnished is the cost of doing the work with proper materials."

This court also explained that where a contractor fails to do a job according to plans and specifications, the property owner may have the contractor's defective work repaired or completely done over by competent workmen and deduct this cost from the original contract price. This court also held that under no circumstances may a property owner withhold payment of the full contract price, although the contractor breached his expressed or implied contract.

Not Rock

All interested parties are bound by the terms of an excavating contract. Hence if the contract authorizes an engineer to decide the amount due the contractor, the latter is bound by the engineer's honest decision.

For example, in *Massman Construction Company v. Lake Lotawana Ass'n, Inc.*, 210 S. W. (2d) 398, it was shown that a contractor and a county made a contract for excavation work. This contract provided that the contractor would receive extra payment for excavation of rock and shale. The contract stated that it was the duty of the engineer to determine the work done and the amount to be paid the contractor.

The engineer decided that certain material removed by the contractor was not rock, though blasting was required. Since no mistake, fraud, or bad faith was practiced by the engineer the higher court refused to award the contractor the contract price for rock, saying:

"The engineer testified that the material was shale, not rock. . . . We find nothing in the evidence to indicate any fraud on the part of the engineer, in this respect."

Suit by Property Owner

According to a recent higher court, only city officials may file suit and prevent violation of a city zoning ordinance. Hence, the court will not render a favorable verdict on a suit filed by nearby property owners who allege that operation of a business violates a zoning law.

For example, in *Weinberg v. Kracke*, 55 Atl. (2d) 797, it was shown that a company made application through the buildings engineer of a city for a permit to establish a new business on property situated in a district wherein a city zoning ordinance prohibited the use of the property for business.

Certain owners of nearby dwellings filed suit and asked the court to prevent operation of this business. The higher court refused to do so saying:

"We do not think this suit can be maintained as a taxpayers' suit to enjoin the illegal construction on or the illegal operation of the premises. Such action has to be taken by the public authorities."

However, owners may sue to prevent a legal nuisance or a real hazard.

Law of Foremen

It is well established law that an ordinary employee cannot recover damages or compensation for an injury sustained while "off the job". Hence, ordinary employees cannot recover for injuries received while going from their home to their employers' place of business, but this rule of law usually is *not* applicable to foremen.

For instance, in *Hohman v. Soffel Rock Company*, 46 Atl. (2d) 475, it was shown that a foreman had no regular place of work, but went from one job to another as directed by his employer. He used his own automobile, for which he was reimbursed by the employer. While on a job to which he had been

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assigned, the foreman was not required to report regularly to the employer's office or place of business.

One morning the foreman started from his home in his automobile, taking with him materials which he had at his home to complete a job that day. On his way the foreman was killed.

The employer contended that the injury was not sustained "within the scope of the employment", and refused compensation. The higher court awarded compensation, saying:

"The service of the employer's interest in the circumstances shown necessarily made of the claimant a 'roving' or 'itinerant' workman. The claimant's travel, for which he was reimbursed by his employer, was an essential part of the expeditious performance of his work in the furtherance of the employer's business, as was also his transportation of the supplies which were stored at his home for his use in his work."

Boy Drowns in Gravel Pit

According to a recent higher court, the owner of a gravel pit or quarry is not obligated by law to fence in the property to safeguard children unless the testimony shows that the owner of the premises *knew* that small children were "attracted" to the premises for play.

For example, in *Wood v. Consumers Company,* 79 N. E. (2d) 826, it was shown that a sand and gravel company in excavating sand and gravel from its land formed a deep pond. One day a small boy was drowned while sliding on thin ice on the pond. His father sued the company for damages, contending that it should have built a high fence around the pond to protect innocent children.

The higher court refused to hold the company liable, saying: "The private owner of land is under no obligation to strangers to place guards around excavations upon his land and the law does not require him to keep his premises in safe condition for the benefit of trespassers or those who merely come to seek their own pleasure or to gratify their own curiosity."

For comparison, see *Howard v. Rockford,* 270 Ill. App. 155. Here a boy was drowned in a stone quarry which had filled with water. This court held the owner of the quarry liable for damages for death of the boy because the testimony showed that the quarry owner had for many years known that small children from the age of 4 years to 8 years repeatedly went upon the property. The quarry, pool and springboard upon the water lured the childish curiosity as a place to play.

Leased Equipment Is Damaged

All courts agree that a company which leases machinery or equipment must exercise *at least* ordinary and reasonable care to prevent it from being damaged.

For example, in *Gregory v. Williams,* 35 So. (2d) 451, it was shown that one Williams leased to the Mid-South Pav-

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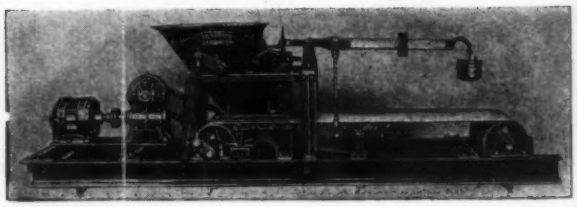

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equipment constituting a plant for the manufacture of asphalt. One year later, and after receiving the equipment back, Williams filed suit against the lessees to recover the cost of certain repairs. The higher court decided that the company must pay Williams $150 for repairs to a diesel unit, and $75 for failure to return the fuel pump, and various other expenses.

This higher court said that one who leases machinery or equipment must use "ordinary" care to prevent damage to it. Hence if the equipment is damaged through carelessness of the lessee he is *fully liable* to the owner of the equipment for repair costs.

Trucker Killed

An employer can't avoid paying compensation to a truck driver who was killed while another regular driver was driving the truck.

In *Kocher v. Creston Company,* 166 Fed. (2d) 680, it was shown that a truck driver named Kocher was killed while he was asleep. A fellow employee was driving the truck.

The lower court held Kocher's dependents not entitled to compensation, but the higher court reversed the verdict, saying: "The test is who was in charge of the actual operation of the vehicle at the time of the accident."

Release Held Binding

Considerable discussion has arisen from time to time over the legal question: If an injured employee signs a release and accepts a small cash payment in full settlement, can he sue and get additional compensation or damages when he discovers that his injuries are more severe than he believed? No, unless the employee can prove fraud.

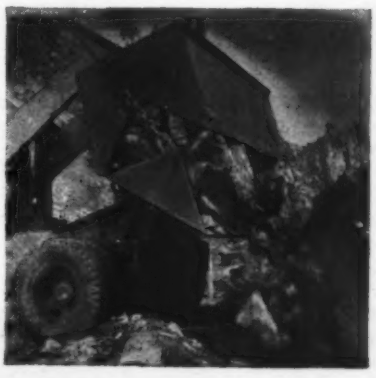
For instance, in *Tewksbury v. Fellsway,* 65 N. E. (2d) 918, it was shown that an employee was seriously injured. In reliance upon the opinion of the doctor, the employee settled his claim for damages for $1,850, and executed a release to his employer. Later the employee became afflicted was an "aggravated and perilous condition of osteomyelitis of the right leg and will continue to have a permanent disability of his right leg. Then he filed suit and asked the court to cancel the release he had signed. The higher court refused to do so, saying: "It is settled that one who executes a release for the injuries then known *cannot,* on the subsequent discovery of injuries not known or suspected at the time of settlement, obtain a cancellation of the release and that the release is binding in the absence of fraud or concealment."

Book Account

According to a recent higher court, the seller of materials may compel payment based on the amount shown on his books, provided that the purchaser has *failed* to keep records to prove that the seller's book account is incorrect.

In *Palpar Rock Company v. Thayer,* 189 Pac. (2d) 752, the Palpar Rock Company sued Thayer on a book ac-

30 SECONDS... and another load of rock is on its way with the DEMPSTER DUMPSTER SYSTEM



Attach two chains to the loaded container . . . pull a lever in the truck cab . . . the load is hydraulically lifted into carrying position and you're on your way to the crusher in less than 30 seconds. That quick pick-up is important, but just as important is the fact that your loading crew is continuously loading containers. Trucks don't stand idle waiting to be loaded . . . there's no waiting by loading crews between truck trips. This cycle of continuous loading, continuous hauling is the secret behind the low cost Dempster-Dumpster System. One truck hoisting unit handles any number of containers spotted through your quarry . . . does the work of 4 or 5 conventional trucks. Cost of installing is remarkably low, write for catalog 247 today. Photo at right shows automatic dumping operation at crusher.

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count for rock sold and delivered to the latter, who denied that he had been delivered the amount of rock listed in the seller's book account.

The higher court held that Thayer must pay the amount shown on the rock company's books, if he could not prove that the book account was incorrect.

This decision establishes new law that a court may rely upon the correctness of a seller's book account until it is proven by the buyer to be incorrect.

Proximate Cause

Considerable discussion has arisen from time to time over the legal question: Who is liable when three or more motor vehicles are involved in a collision? According to a recent higher court decision, the one whose negligence was the *proximate* cause of the collision is *solely* liable.

For example, in *Southwestern v. Wafer,* 208 S. W. (2d) 614, the testimony showed facts, as follows: A driver stopped a bus after dark near a bridge on a highway. A driver of a truck loaded with lime approaching from the rear, applied his brakes. Because the brakes were defective, he collided head on with an approaching car, whose occupants were seriously injured.

It is interesting to observe that the higher court held the bus company solely liable on the theory that the bus driver's negligence in suddenly stopping the bus *without giving any warning signal* was the proximate cause of the collision. The court said: "The fact that Summers (truck driver) was guilty of negligence in driving the truck with defective brakes does not conclusively establish that the bus company was not guilty of negligence or that its negligence was not a proximate cause of the damage."

Damages for Deceit

It is well established law that if a motor vehicle owner is induced by deceit or fraud to sell his car for less than its actual value, the purchaser who practiced deceit is liable in damages.

For illustration, in *Shell v. Eounce Motor Company,* 210 S. W. (2d) 110, it was shown that a cement worker named Shell used his car every day in his work. He had mechanical trouble with it and took it to a used car dealer who told him that the car needed a new motor. Believing this, Shell selected a used car and the dealer finally allowed Shell $775 for his car. About a week later Shell saw the car on the road and learned that no new motor block had been put in it, but that the dealer had sold it for $1394, after spending $145 for repairs.

Shell sued the dealer. The higher court held:

"We think it must be inferred that plaintiff's (Shell's) car was worth at least $1249 at the time it was secured by defendant (dealer), and that plaintiff was damaged as a result of the transaction."

In other words, this court indicated that the automobile was worth $1394, less $145, or $1249 and that Shell could recover damages equal to $1249, less his trade-in price of $775.

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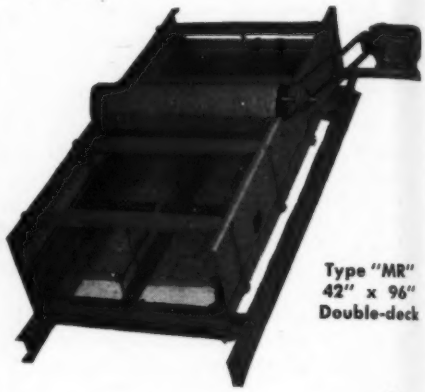

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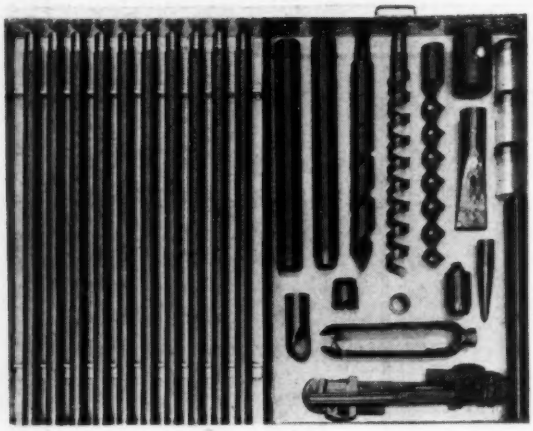

TWELVE SOIL AND EARTH SAMPLING TOOLS IN HANDY STEEL BOX

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ACCURATE SAMPLES OF EARTH AND SOIL MATERIALS

Thirty years' experience has proved these tools will recover accurate samples from practically all earth materials.

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New FARREL-BACON CRUSHER has many advantages

Design features of this 36 x 30 E stone crusher include: (1) Meehanite frame, sectionalized when necessary; (2) removable water cooled bearings; (3) improved design of swing jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive.

Write for further details or engineering help. BA-1

FARREL-BACON
ANSONIA, CONNECTICUT

NEWS OF CONCRETE MANUFACTURERS

General Material Merges With Concrete Inc. To Effect Improved Service

According to a recent announcement, the General Material Company of St. Louis, Mo., has been merged with Concrete Incorporated, also of St. Louis. The new business will be operated under the latter name and all General Material contracts for deliveries will be carried out by Concrete Incorporated.

The General Material Company was incorporated in 1927 and was one of the pioneer developers of ready-mixed concrete in this country. Among several practices popularized by the firm was the use of revolving-drum truck bodies and of six-wheel trucks. The company also led in forming the pattern of labor relations in the industry. The merger was made in the interest of economy and of broader service through expanded facilities.

Katterjohn Makes U.S. Survey Of Concrete Masonry Industry

George W. Katterjohn, president of the National Concrete Masonry Association, has just completed a tour of the United States in order to make a report on the industry. While in Dallas, Tex., he was the guest of John S. Chase of Chase Building Products.

Mr. Katterjohn operates concrete products plants in Owensboro and Paducah, Ky., and has a background of forebears who were associated with the building industry for the last 95 years in western Kentucky.

Add Ice Cubes to the Mix— And You Get Cavity Blocks

What? Ice cubes as ingredients for concrete blocks? Yes, that's the way one manufacturer in Miami, Fla., makes 'em. W. R. Twiford, the ingenious chef, adds chipped ice to the concrete, which in melting produces small cavities in the blocks.

Says Inventor Twiford, the resulting "cavity block" is a very lightweight unit, having the additional advantages of being economical, soundproof and weatherproof. Mr. Twiford states that he began his research of this type of block after hearing reports that the Germans had used such a process.

Building Units, Inc., Develops Modular Standard "Cind-R-Bloc"

Building Units, Inc., Primos, Pa., announces the introduction of a modular standard "Cind-R-Bloc" with the following features: sound insulation, nailability, lightness, strength, durability, fire-resistance, economy and uniformity. The units are also said to be "dampproof."

The manufacturer cites the following points: modular dimensions; thicker face shell at center, assuuring greater tensile strength and stronger walls; vertical mortar grooves on ends, providing stronger bond and improving stability; wider mortar bed on top; hand holds for greater ease in handling; rectangular cores for higher tensile strength and a greater load in compression; accurate dimensions, with close tolerances on width, height and length.

Checking their itinerary on a globe, H. X. Eschenbrenner, president of the Universal Concrete Pipe Company, and his son, H. E., are shown as they conclude preparations for a two-month business trip to Europe. The father-and-son combination left New York City on August 24 on the S.S. "America." They are scheduled to visit France, Belgium, Switzerland, Germany and England.

California's State Department of Corrections has announced that the new prison industries at San Quentin will include a concrete block plant. The facilities will be used to develop materials for state buildings, with its products first going to residence housing at new penal institutions.

Coming Events

November 4-5, 1948—Los Angeles. Annual meeting, California Associated Concrete Pipe Manufacturers, Mayfair Hotel.

January 31-February 3, 1949—Cleveland. Annual convention and exposition, National Concrete Masonry Association, Cleveland Auditorium.

February 14-18, 1949—New York. 19th annual convention, National Ready Mixed Concrete Association, Hotel New Yorker.

New York Cement Shortage Creates Construction Crisis In Niagara Region

The current cement shortage, worst in the history of the building and construction industry on the Niagara frontier, will not be alleviated for several months, it was predicted at Buffalo, N. Y. Officials of local mills reported they have "scraped the bottom" to stave off a complete stoppage of concrete work in home and industrial construction.

Many distributors reported that they have no cement for sale and all of them admit delivery uncertain. Officials of the Huron, Lehigh and Federal Portland cement companies predicted that there will be no relief until the slack winter period gives them an opportunity to build a surplus.

Reasons given for the shortage are as follows: an unparalleled demand because of the enormous construction program; the fact that suppliers were not prepared for the increased business that developed when ready-mix material was shut off by the truck driver strike; inability of mills to bag cement fast enough for delivery to distributors; enforcement of the recent federal basing-point order, which applies to the purchase of cement from sources which formerly made the material available to local distributors at prices on a par with local mills; a "gray market" in which some local distributors are accepting premium prices on sales of cement to Canadian dealers.

Officials in the cement industry say that the Canadian government has virtually forced dealers out of business by commandeering all supplies for its highway and hydro-electric power programs. As a result Canadian distributors have been quietly operating across the border, denting the supplies here severely by offering higher prices.

Raymond Mooney, district manager for Huron Portland Cement Co., which supplies the local area from mills at Alpena, Mich., said his company was unable to build up stocks through last winter and spring because the Allis Chalmers strike interrupted construction of four new kilns, and later the Huron Portland workers went on strike for five weeks.

"We didn't make a bit of cement all winter," he said. "Right now we're going to have a sad story to tell until spring."

Thomas Rogers, assistant sales manager for Federal Portland Cement, said that concern, which has a capacity of 1,200,000 barrels of cement a year, is now "scraping bottom."

"Our inventory is so low that we will be unable to meet demands until spring," he said.

Texcrete Company's Plan For Expansion Begins With New Dallas Plant

An outstanding expansion program is being launched by the Texcrete Company, organized at Fort Worth, Tex., in 1946 for the production of haydite block, which has under construction at Dallas a $75,000 plant.

The new facilities, designed to turn out 1,000 blocks per hour, will be the first unit of an installation which will increase the total investment to more than $175,000 after the building of a warehouse. The Dallas structures will be of Texcrete haydite block and steel. Besser Vibrapac equipment will be installed. In charge at the Dallas plant as general manager will be Frank Locke, Texcrete vice-president.

First Aid to Aching Feet — Springy Concrete Floors!

In an attempt to overcome the common fault of concrete floors which are "too hard," Plastering Industries has presented a new formula developed by the John B. Pierce Foundation, Raritan, N. J., for impact-absorbing concrete. The secret is reportedly in the addition of asphalt to a standard concrete mix.

Proportions of the formula are approximately as follows: 2,000 lbs. of crushed stone, through ¾-in. on ⅜-in.; 1,600 lbs. of natural concrete sand, through 4-mesh; 4 bags of portland cement; 7 gallons of asphalt emulsion. The latter ingredient is composed of 95 parts of Hydropel (a proprietary asphalt) and 5 parts of vinsol emulsion.

The method of mixing and pouring is the same as for ordinary concrete, except that after spreading the mix is rolled. Immediately before the initial set the roller is used again. Impact absorption is said to be reduced 30 to 40 percent by addition of the asphalt, and the cost of this type of flooring is practically the same as that of ordinary concrete. Thermal conductivity is reportedly increased 10 percent.

Illinois Block Plants Sign Wage Contracts with Unions

Four Springfield, Ill., concrete block plants recently signed a contract with the Hod Carriers and Common Laborers Union, local 477, giving a 10-cent hourly wage increase to about 85 employees.

The plants are the Poston Brick & Concrete Products Co., the Concrete Block & Tile Co., Mortarless Masonry Co., and the Standard Concrete Pipe Co. The pay raise brings the wage minimum to $1.14, the maximum to $1.36.

Western Brick & Supply Co. Host at Local Open House

On July 7 the residents of Nebraska City, Neb., were guests of the Western Brick and Supply Company at its plant, at an "open house." Visitors were treated to a tour of inspection through the company's new facilities, built to replace the structure destroyed in 1947.

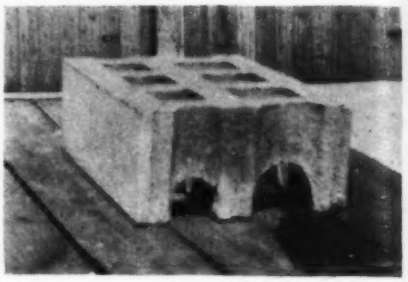
About 30 officials attended a picnic at the home of Manager Otto Gates before the public demonstration.

• Deliveries of bulk cement from the plant of Southwest Portland Cement Company, Victorville, California, are made in Fruehauf special tank-trailers. In the accompanying photograph the trailer unit is shown making a delivery to a ready-mixed concrete plant in the Los Angeles area.

By using two special Fruehauf semi-trailers in combination with a converter dolly, 115 barrels of cement are hauled in a single load. In addition to the economy of bigger loads, sacking costs are eliminated and customers with silo storage are saved double handling charges. In this operation, the trailers are loaded from hoppers at the mill and are dumped directly into customers' bins.

New Concrete Block With Two-Way Circulation Developed by Kluge & Son

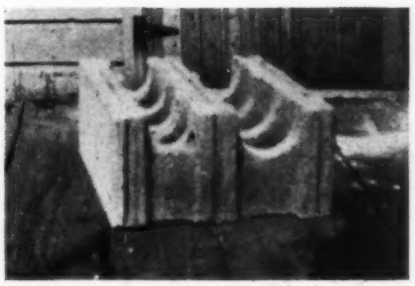
At Cherokee, Ia., Albert Kluge and Sons are producing a new type of concrete block, patented in October, 1947,



• View showing vertical air spaces.

which has both vertical and horizontal air spaces. The units are twice the size of the standard block; they are said to be waterproof and weatherproof.

A Kluge process also adds a ⅝-in. colored facing to the block, if desired.



• Reverse view shows horizontal air spaces.

Mr. Kluge invented his own block machine. Associated with him in the business are his sons, Spencer and Kernel, both World War II veterans. The Kluge plant has been recently enlarged in order to increase production, but even with the improved facilities output is running behind the current demand.

P. C. A. Publishes Bulletin on Concrete Irrigation Pipe

Irrigation with Concrete Pipe, a bulletin published by the Portland Cement Association, is now available through the office of the American Concrete Pipe Association, 228 N. La Salle Street, Chicago, Ill.

Methods of applying irrigation water to the land are fully described, with simple sketches and photographs to supplement the text. Valuable information on flow sizes for various soils and sizes of strips and recommendations for inches of water per application are condensed in convenient tabular form. One section of the booklet covers the making of pipelines and structures; and another deals with the designing of such systems. Hypothetical problems are worked out in detail, and a table of friction loss in concrete pipe in feet per 1,000 feet is given. Appended are the A.S.T.M. standard specifications for concrete irrigation pipe (C118-39).

The Movies Sell My Concrete

By DAVID MARKSTEIN

THE feature picture had just flashed off the screen at a neighborhood movie house in a small Midwestern town. A few people rose and walked out. Down the aisle came the late arrivals who had been waiting for the beginning of a new show to take their seats. The cartoon came on; the audience settled down to watch.

Following the cartoon, a new title flashed on the screen which was not on the program listed on the billboard outside the theatre. An announcer repeated the slogan on the title slide. Then the pictures—and the commentator's voice—proceeded to do a selling job for a local concrete company.

"This sort of advertising in movie houses is some of the most productive advertising we have ever used," reports the owner of the company. "It's good advertising anywhere, but it's particularly good for a concrete manufacturer in my position, located in a small town where the only newspaper is a weekly. Through movie advertising, I can put my message before the theatregoers every day. And it's an effective message. Psychologists say that the most lasting impressions people receive are those we get through visual means—messages we *see!* The movies sell my concrete."

All over the country, in big city theatres, in neighborhood movie houses, and in small towns, the movies are selling everything from mortuary service to automobiles. How can they help the average concrete manufacturer? What is the cost of this unusual advertising medium? What is its effectiveness? How can you arrange for advertising to be run in movie houses? How much will it cost?

Here is what the small-town concrete manufacturer mentioned above has to say about the effectiveness of advertising in local movies:

"There are seven reasons why, in my opinion, the movie house advertising we do attracts attention and sells my company. First off, it reaches a good cross section of the best prospects in the city. Second, I reach them at a time when they can't miss my message. Advertising in newspapers can be buried or missed—although, mind you, I still believe there's no real substitute for the newspaper, any more than there is for any other major advertising outlet. Advertising over the air can be turned off. Outdoor signs can be glanced over. Direct mail is sometimes thrown away unread. But in a movie house, there is no escaping the advertising. The prospect both *sees* it and *hears* it.

"Naturally, there is the question whether he is more irritated than sold by being 'advertised to' when he has paid for entertainment. That can happen. I think it is a wise practice for concrete manufacturers considering movie advertising to check into the policies of the theatres in which their ads will appear. Make sure that the theatre does not ram too much down the customer's throat. The average movie advertising trailer runs for a minute or so. Three or four of them are o.k. Few if any prospects will be irritated. But if the theatre takes all the advertising films it can book, then watch out! Your prospects there are likely to be more irritated than sold.

"Third, I reach these potential customers when they are in a receptive frame of mind. They are relaxed. Their attention is not distracted by anything else. It is concentrated entirely upon what they see on the screen. The surroundings and the atmosphere of a theatre invite open-mindedness and awareness of what is being said and shown.

"Fourth, I have the advantages of a two-way approach, with a third advantage growing out of the first two. The two-way approach is sight and sound. If it is true that the most lasting impressions people receive are those they see, then the movies rate high as an advertising medium because they appeal mostly to the sense of sight. Supplementing this is the spoken commentary of the announcer whose voice sells my concrete for me. The third factor that grows out of these two is action. Action focuses the prospect's attention sharply upon the visual message and the spoken message that accompanies it.

"Fifth, I have a day-in, day-out recurring advertising punch. My movie ads go on every day in the local theatre. The pictures change four times each week, and the average movie fan is likely to attend at least twice. That means he is exposed to my advertising message twice every week. Then at the end of the week, we change to a new film and repeat the one-two selling punch. In a town with no daily newspaper, this is virtually the only way to present adver-

(Continued on page 141.)

• This movie theatre is really a "double-feature" ad possibility—the structure is itself made of concrete and the programs include advertising films for concrete manufacturing firms.

National Concrete Masonry Association

• The rock-face building (right) is a far cry from the modern concrete masonry residence (above). The two contrasting structures are symbolic of the tremendous progress the industry has made in a relatively short span of years—progress which would have been virtually impossible without the unifying and directive influence of a strong association.

another ON THE SPOT report

Its 30-year history eloquently attests the effectiveness of cooperative effort

By WILLIAM M. AVERY

IN the 23-year interlude between World Wars I and II the concrete masonry unit industry gained stature and public acceptance more rapidly than any other branch of the vast building material field.

Starting from a near-zero position, without standing, without organization and without vast capital resources, the industry has inched itself forward until today it holds a position of first-rank importance. Viewed in retrospect it seems astonishing indeed that so complete a reversal could *ever* have been accomplished in a field which is so stubbornly resistive of any kind or degree of change. That the task should have been carried out in less than a quarter of a century strikes us as bordering on the miraculous, again having due regard for the reluctance of the construction industry and the public in general to accept new materials and methods.

Among the diverse influences which have brought about this change, none, in our judgment, has more profoundly affected the course of events than the National Concrete Masonry Association. In common with most similar organizations in existence today, N.C.M.A. is an outgrowth of the general trade association movement which got under way following the first World War. By requiring the marshalling of large groups for a common objective, World War I demonstrated for the first time to American manufacturers the advantages of cooperative effort, and foresighted industrial leaders reasoned that if the technique was effective in time of war, it should be at least equally effective in time of peace.

During the first war the American building industry was largely moribund. There was some activity in the construction of cantonments and war plants, but it is doubtful whether concrete masonry units had even a minor place in the picture. Following demobilization there was a tremendous upsurge of demand for all types of building materials for the construction of desperately needed homes, apartment buildings and factories. Although concrete masonry units had been on the scene for a number of years, this stimulus provided the industry with an unexcelled opportunity to move forward.

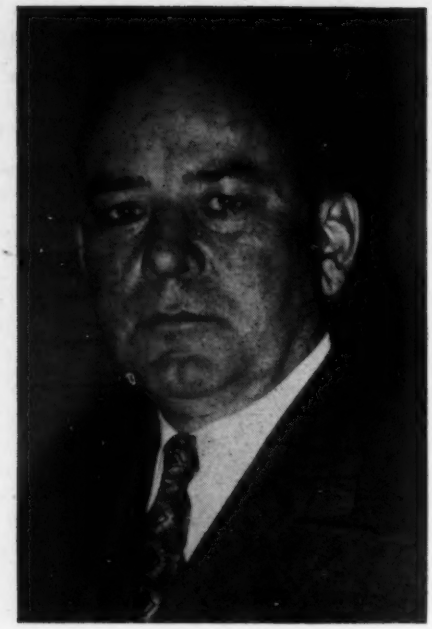
There were, however, serious handicaps. The machines then available for the production of concrete blocks were extremely crude as compared with modern machinery as we know it today. The product itself was in more or less ill favor because of a lack of knowledge of the fundamental principles of concrete as applied to the manufacture of masonry units. Much the same condition existed in respect to all uses of concrete including monolithic structures, but the attendant prejudice against the material weighed most heavily against the concrete products industry.

In the general market for building materials concrete masonry units were practically unknown, their primary use up to that time having been relegated to the limited field

• E. W. Dienhart has been executive secretary of N.C.M.A. since its establishment as an independent organization in 1943. Closely connected with the industry for many years, his able leadership has been an important factor in the association's growth.

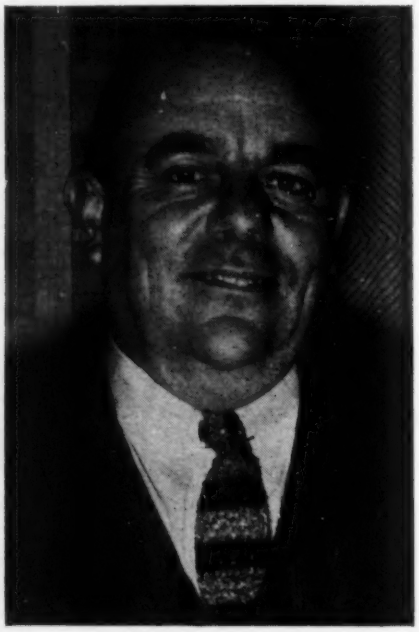
• George W. Katterjohn, Katterjohn Concrete Products, Paducah, Ky., is currently president of the association. Like his predecessors in this important job, he is traveling extensively throughout the country to keep N.C.M.A. in close touch with the industry.

• R. E. Copeland became director of engineering for N.C.M.A. in 1946. An acknowledged authority on technical problems relating to concrete masonry units, he was for many years engaged in concrete products research work for the P.C.A.

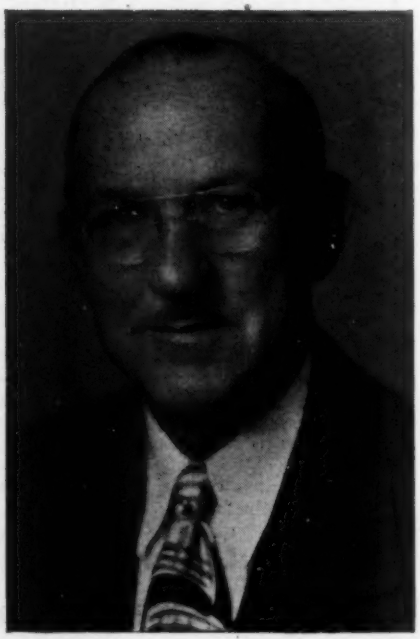


• The late Dan F. Servey, Haydite Corp., Kansas City, Mo., 1936—1937.

• Benjamin Wilk, Standard Building Products Co., Detroit, 1933—1935.



• George H. Krier, Nailable Cinder Block Material Co., Brooklyn, N. Y., 1938.



• Below, left: Harve Kilmer, Iowa Concrete Block & Material Co., Des Moines, 1939. • Center: Roy N. McCandless, Turner Gravel Co., San Antonio, Tex., 1940. • Right: John S. Chase, Chase Building Products Co., Fort Worth, Tex., 1941.

of foundations for residences, garages and incidental farm buildings. This was in sharp contrast to the wide acceptance of clay products and lumber. Almost no information was available relative to the merits of concrete units in fire resistance, durability, load carrying capacity, resistance to heat and sound transmission, and similar characteristics which time and experience had firmly established for competitive materials.

A few of the pioneers in the field came to the conclusion that only through organized and cooperative effort could the industry hope to grow beyond the circumscribed limits which had governed it in the past. Accordingly, on March 6, 1918, a small group of producers met in Chicago and set up an informal organization known as the Concrete Products Association. W. R. Harris, then editor of a trade magazine which served the field, was chosen as temporary chairman. This action was formalized on December 17 of the same year at a meeting in the offices of the Hydrostone Co. in Chicago, at which J. K. Harridge was elected president.

The first annual convention of the Concrete Products Association was held at Chicago in February, 1920, in conjunction with the National Conference on Concrete House Construction at the Auditorium Hotel. At that gathering Mr. Harridge was reelected president, and James E. Montgomery, now vice-president and advertising manager of PIT AND QUARRY and THE CONCRETE MANUFACTURER, became secretary-treasurer.

Past presidents of the association, pictured on these pages, have had an incalculably important influence on the growth and development of the N.C.M.A. Dates in the captions

Activities during the early years of the young organization were carried on in close cooperation with the Portland Cement Association, which contributed generously in the services of its competent technical staff and in the conduct of many research projects which were pursued jointly. One of the first problems for which a solution was sought was the decidedly unfavorable fire insurance ratings accorded to structures built with concrete masonry units. C.P.A., P.C.A. and the American Concrete Institute jointly financed a comprehensive series of fire tests at Underwriters' Laboratories in Chicago. The favorable results of the tests not only established a basis for the

reduction of insurance rates on concrete masonry structures, but paved the way for the product ultimately to receive equal consideration with walls built of solid clay brick.

In subsequent years large-scale investigations were carried on for the purpose of establishing accurate engineering data with respect to the load carrying capacity of concrete masonry walls. A continuing research program was conducted to determine the value of various methods of manufacturing the products, all having to do with the improvement of quality and the lowering of cost. Thus, by almost imperceptible degrees, there were marshalled together the facts, the evidence and the techniques with which to combat suspicion and prejudice.

indicate the year or years in which they served. With the exception of Mr. Servey and Mr. Ehle, these men are still active in the affairs of the organization.

In the early 20's an entirely new factor came into the picture to widen and enlarge the market for concrete masonry units. Francis J. Straub of New Kensington, Pa., was granted a patent on a unit employing cinder aggregate. By a lot of hard work and the exercise of an almost missionary zeal, Mr. Straub persuaded the construction industry that here was a product having altogether new and appealing virtues. New features in terms of insulation, sound absorption, texture, nailability and lightness were added to the nomenclature of the industry. After Straub in rapid succession such lightweight materials as haydite, Waylite, Celocrete, Superock, and (more recently) volcanic cinder and pumice aggregates, made their appearance. A brand new field with almost unlimited horizons was opened to the industry, and the Concrete Products Association, in cooperation with the Portland Cement Association and the research laboratories of various state universities, began intensive research activity along wholly new lines.

The organization changed its name in 1930 to the Concrete Masonry Association for the purpose of better defining the widening scope of its activities. Under the leadership of D. R. ("Spec") Collins, who became president about this time, the problem of merchandising the industry's product received the first serious attention. "Spec" Collins, who had served the primary organization as secretary for a number of years, was the first leader in

• Henry E. Buchholz, Illinois Brick Co., Franklin Park, Ill., 1947.

• Dean R. Lynde, Cinder Concrete Products, Inc., Denver, Colo., 1946.

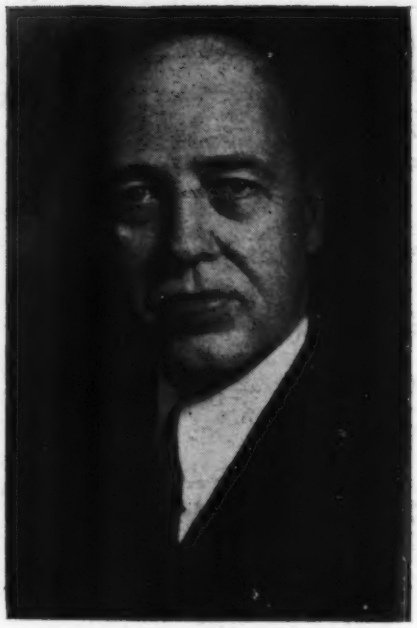
• The late Clarence E. Ehle, Cleveland Builders Supply Co., Cleveland, O., 1945.

• Below, left: John L. Strandberg, Concrete Building Units Co., Kansas City, Mo., 1942. • Center: Walter J. Manhardt, Best Block Co.; Milwaukee, Wis., 1943. • Right: Fred W. Reinhold, Anchor Concrete Products, Buffalo, N. Y., 1944.

the industry to champion the cause of sound, aggressive merchandising policies, and under this impetus producers themselves began looking for new markets as well as trying to expand existing outlets.

In 1932 summaries of results from a wide range of tests, along with other pertinent technical data and details of construction, were published by the association in a booklet entitled *Facts About Concrete Masonry.* For perhaps the first time definitive test-supported data were made available to enable architects, engineers, contractors and other elements of the construction industry to judge the true merits of concrete masonry units. The 70-page booklet probed every important aspect of the subject, and won such hearty acceptance among the industry and its customers that it is now in its 9th edition. It has been frequently revised and brought up to date, and more than a quarter of a million copies have been distributed. *Facts About Concrete Masonry* is "must" reading, not only for users of the product, but for any manufacturer who accepts a proper sense of responsibility to the public and to industry of which he is a part.

The great depression caught the products industry in pretty much the same predicament as a fighter, just struggling up from the canvas, who receives another haymaker. The blow hurt, and the development impetus

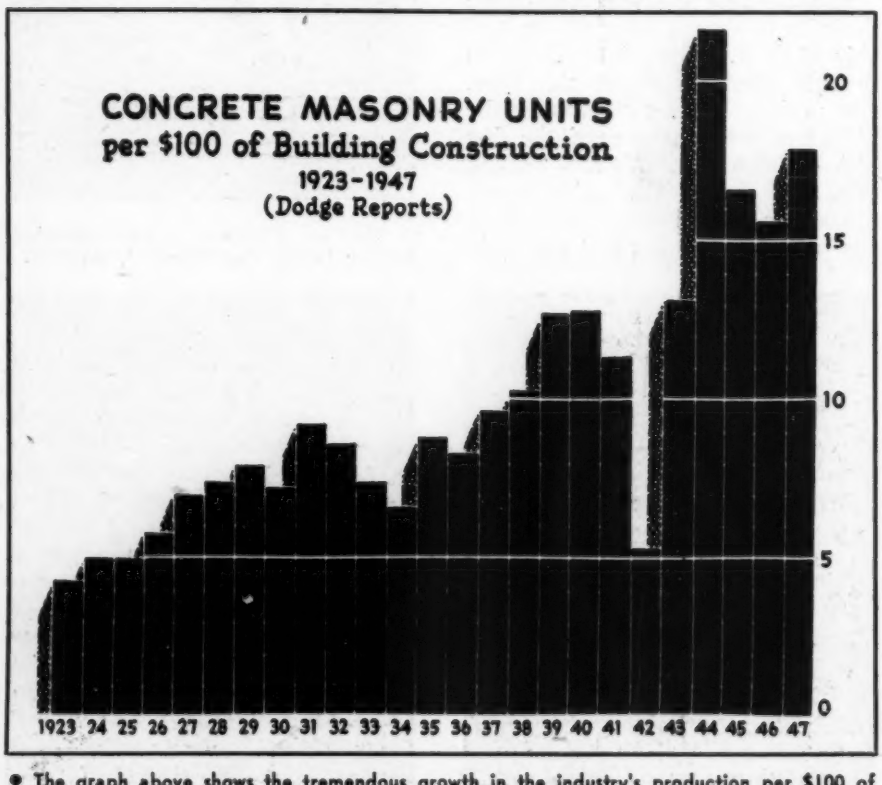


• James E. Montgomery, now vice-president and advertising manager of Pit and Quarry and The Concrete Manufacturer, was the first secretary-treasurer of the Concrete Products Assn.

was certainly retarded, but by this time the industry had acquired the kind of leadership it needed to survive. In 1933 Benjamin Wilk (Standard Building Units Co., Detroit, Mich.) was elected president of the association. He and other leaders of the industry worked untiringly to keep the organization not only alive but actively functioning during this difficult era. Under Mr. Wilk, and with "Spec" Collins as assistant Secretary, the association actually made important progress in advancing the use of its product during the depression by battling successfully for the inclusion of concrete masonry units in the many projects comprising the national recovery program. Thus an economic drubbing which might have been disastrous to the industry was actually turned to good account, and manufacturers of concrete block had conclusive proof of the benefits inherent in a strong association.

As proof that the National Concrete Masonry Association (the present name was adopted in 1934) emerged from the depression strengthened and revitalized, the group's annual gathering in Detroit in 1936 marked one of the most notable and successful conventions in the history of the industry up to that time. It brought together producers from all over the United States in a stirring demonstration of the industry's full recognition of the value of the association. The 1936 convention touched off an industry-wide wave of enthusiasm, and marked the beginning of a dynamic drive for recognition in the masonry construction field. Members of the association undertook aggressive promotional campaigns, and under this impetus, combined with the concurrent development of high-production machinery, output began to increase rapidly.

The growing importance of the related machinery industry led to the inauguration of the Concrete Industries Exposition, which was held for the first time in 1937, in conjunction with the association's regular annual convention. These events brought together the greatest number of concrete masonry unit manufacturers ever before assembled, making it clearly evident that the industry's product was at last headed for a more important place in the field of building materials. Much credit is due the machinery industry, which cooperated closely with the association and its members in working out needed refinements in equipment for the manufacture of concrete masonry units, making it possible for production to keep pace with demand. Important progress was made not only in the quantity of output per machine, with consequent lowering of production costs, but in the appearance and performance of the product as well. Under these stimuli many new plants were constructed and older ones modernized during the years immediately prior



• The graph above shows the tremendous growth in the industry's production per $100 of building construction. It clearly indicates the extent to which manufacturers of concrete masonry units have won public acceptance for their products.

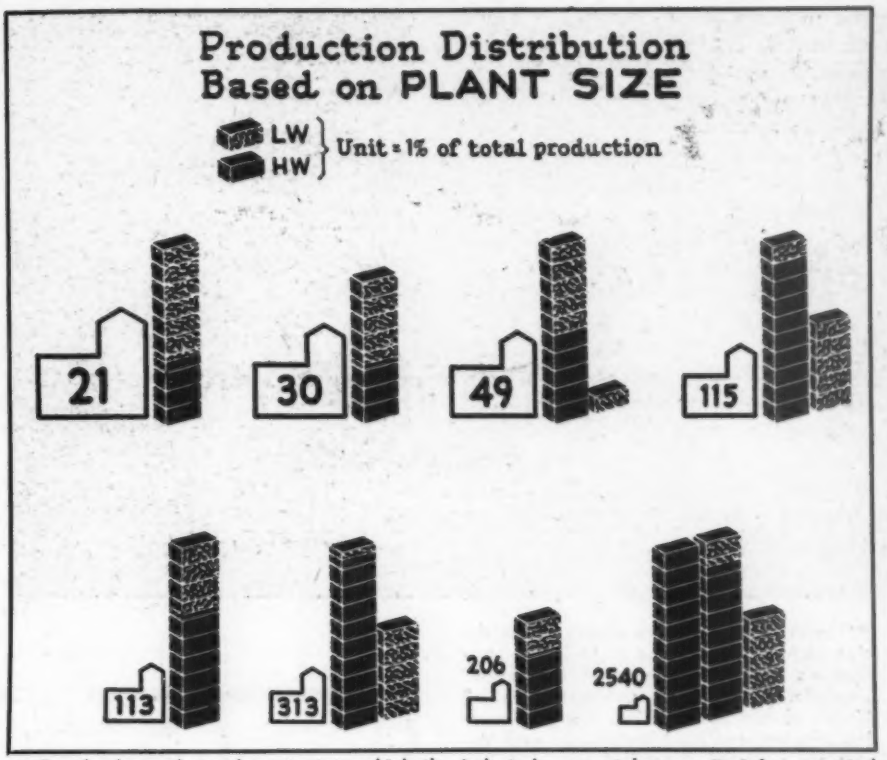
to the outbreak of World War II.

Thus, when the war preparedness program called for the production of vast quantities of materials for military and civilian structures, the masonry unit industry was well prepared to take on an important share of the job. By 1941, when the United States became actively engaged in World War II, the production of concrete masonry units soared to 500,000,000 8-in. equivalents, a new all-time record. For the first time in history the industry's output equalled in wall area the combined output of clay brick and hollow clay tile. Even the most casual observer might have recognized that a minor revolution was in progress in the building materials field.

During this period association activities were supervised on a part-time basis by the assistant secretary, E. W. Dienhart, then assistant manager of the Cement Products Bureau of the Portland Cement Association. The war building program created an entirely new crop of problems for the industry, and it soon became evident that association activities would have to be greatly expanded if concrete masonry units were to receive adequate consideration. To meet this challenge, a small group of block producers, with the assistance of several manufacturers of concrete products machinery, underwrote a project which would provide for the full-time services of a completely independent organization. To the initiative and perseverance of that group must go much of the credit for establishing the strong, effective association which serves their industry today.

The list of officers and members of the board of directors in 1942 who planned and executed this important development, still reads like a copy of "Who's Who In The Concrete Block Industry." It included John L. Strandberg, president; John S. Chase, chairman of the board; Walter Manhardt, Ray A. Berger, and Harold L. Spaight, vice presidents; F. W. Reinhold, secretary-treasurer; M. W. Ferguson, Sam Paturzo, John S. Bailey, and Herbert A. Davis, directors. Ex-officio members of the board of directors at the time were Benjamin Wilk, Dan F. Servey, George H. Krier, Harve E. Kilmer, and Roy N. McCandless.

Thus, in January, 1943, N.C.M.A. entered a new era, and Mr. Dienhart was engaged on a full-time basis in the capacity of executive secretary. At the time governmental agencies were issuing regulations and directives by the boat load on every imaginable phase of industrial activity. Such agencies as the War Production Board, the War Manpower Commission and the Office of Price Administration were for the most part staffed with persons who were not at all familiar with the concrete masonry industry, or with the facilities of the industry available in the overall job of winning the war. With the association acting as advance agent, advocate and intermediary, the industry cooperated fully and effectively with the various war agencies, and was thus enabled to continue operations at a substantial rate of production.



● Graph above shows the extent to which the industry's present large output is accounted for by a relatively small number of plants. A mere 328 plants are today producing over 50 percent of the masonry unit industry's total output, as contrasted with 2,540 plants which account for only 25 percent of the total.

Just prior to the establishment of N.C.M.A. as an independent organization the National Cinder Concrete Products Association was merged with another group of producers to form the Cinder Masonry Research Association. In April, 1944, the latter organization merged with N.C.M.A., uniting all segments of the industry for the first time.

While output declined somewhat from the 1941 peak, the industry's physical plant came through the war in excellent condition, and within a very few months after V.J. day production had returned to the prewar level. Largely because it was prepared for the tremendous postwar demand for building materials, the concrete masonry unit industry in 1946 was able to market a billion 8-in. equivalents, or twice the peak production in any previous year in its history. This output was equivalent to all the wall area represented by the combined production of concrete and clay masonry units in 1941.

Inevitably much of the association's work has redounded to the benefit of non-members. That nonmember producers themselves recognize the benefits they have reaped is evident in the rapid growth of N.C.M.A. since 1943. At the close of its first year the membership stood at about 140. Today the list comprises about 600 regular and associate members, representing at least 50 per cent of the industry's total productive capacity.

Through this steady rise in membership and the attendant increase in revenue, it has been possible for N.C.M.A. to expand its activities in keeping with the opportunities and responsibilities presented by the postwar era. One of the most important steps was the establishment several years ago of an engineering section under the direction of R. E. Copeland, well known to the block industry, and formerly in charge of development and research activities pertaining to concrete products and housing in the Portland Cement Association. As director of engineering for N.C.M.A., Mr. Copeland is concerned with fundamental problems

• The attractive concrete masonry home design pictured here is one of 16 in the association's excellent "Homes of Distinction" portfolio, prepared by architects Loree & Sirrine of Ann Arbor, Mich. Detailed working drawings and specifications for each design are available at nominal cost.

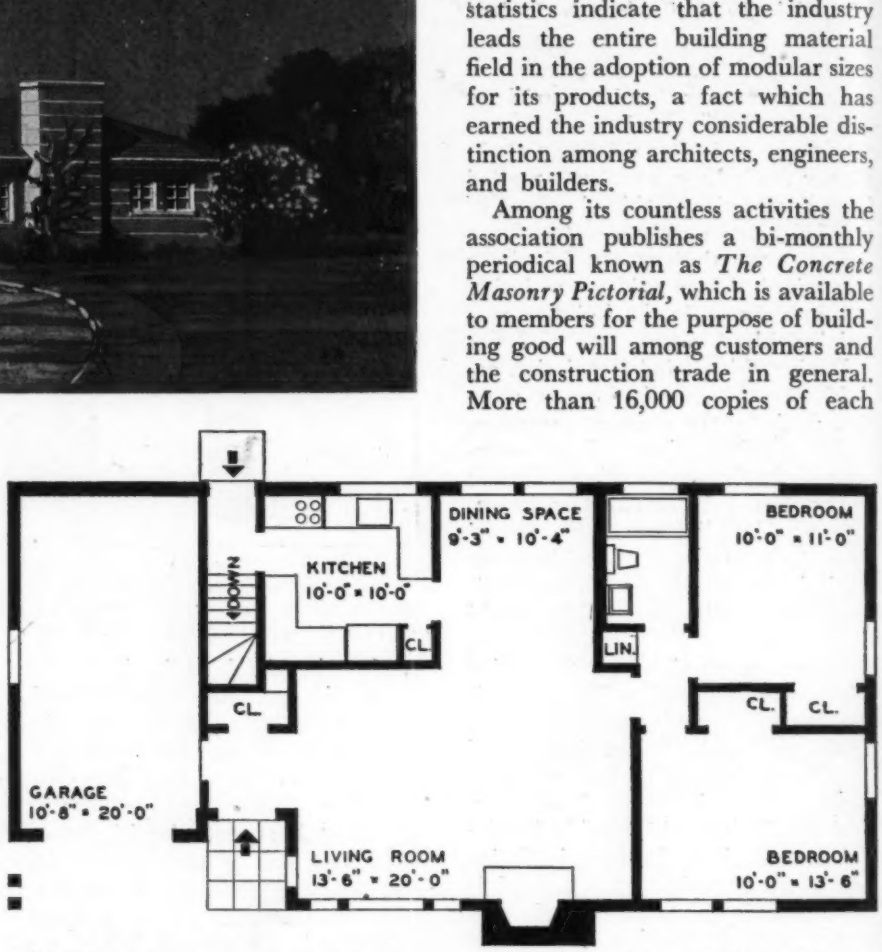
related to the production of quality concrete masonry units, and to building the product into safe, sound and enduring structures. Frequent technical reports are sent to the membership on a wide variety of subjects, and a number of research projects of direct interest to the industry are currently in progress. The association has just released an entirely new booklet, *Design Data on Concrete Joist-Concrete Filler Block Floors.* It contains complete design tables for the use of concrete masonry units in reinforced concrete floors, a still relatively new market with tremendous potentialities.

Another function of the director of engineering is to maintain close contact with the various organizations, agencies and committees which write building codes, specifications and housing standards. Mr. Copeland also handles a wide variety of technical problems presented by members of N.C.M.A. through correspondence and in calls at the headquarters office. Both he and Mr. Dienhart travel widely throughout the United States, and thus have frequent opportunities to discuss every day problems with producers in their plants and in local and regional meetings. In an average year the president, executive secretary and director of engineering spend at least half of their time in the field, personally contacting individual manufacturers and groups of producers in all sections of the country.

of the country today as a direct result of the plan service.

Through its association the concrete masonry unit industry has taken a leading role in advancing the idea of modular coordination for all building materials. All available statistics indicate that the industry leads the entire building material field in the adoption of modular sizes for its products, a fact which has earned the industry considerable distinction among architects, engineers, and builders.

Among its countless activities the association publishes a bi-monthly periodical known as *The Concrete Masonry Pictorial,* which is available to members for the purpose of building good will among customers and the construction trade in general. More than 16,000 copies of each



N.C.M.A. has inaugurated a house plan service for its members in cooperation with an outstanding firm of architects, Loree & Sirrine of Ann Arbor, Mich. Its "Homes of Distinction" portfolio contains perspectives and floor plans (see cut) for 16 attractive concrete masonry homes. Detailed working drawings and specifications are available at nominal cost for each design, and association members can obtain advertising mats for use in connection with local newspaper promotion. An excellent scale model of one of the designs has been prepared for members to exhibit at home shows, county fairs and similar places.

The plan service met with immediate enthusiasm, and more than 30,000 portfolios have been distributed. Its effectiveness as a means of promotion is indicated by the fact that more than 1,000 sets of detailed plans have been purchased. Attractive concrete masonry homes which are a credit to the entire industry are being built in many parts

issue are distributed. The N.C.M.A. *Bulletin* is also sent out regularly to members to keep them informed with regard to current events in all fields of immediate and future concern.

The primary interests of N.C.M.A. lie naturally with projects and problems of direct concern to its members and the industry at large. It does, however, give of its time and resources in cooperating with other trade associations on matters which concern the construction industry as a whole. Memberships are maintained, and an active part is taken, in such organizations as the Chamber of Commerce of the United States, Producers' Council, Building Officials Conference of America, Pacific Coast Building Officials Conference, American Society for Testing Materials, American Concrete Institute, Construction Industry Information Committee, Building Products Institute and others.

Another important activity of

N.C.M.A. is its sponsorship of the Thomas W. Noble Award, a $500 cash prize presented annually to the owner, employee, or group of employees submitting the most meritorious contribution having to do with the production or merchandising of concrete masonry units. The contest is publicized and judged by the association, and the winning entry is presented at the annual convention.

The planning and conduct of its annual convention occupies an important place in the functions of N.C.M.A. The formal programs are designed to acquaint the members with the state of the industry, and to present subjects which will stimulate and refresh the thinking of those who attend. Most sessions are open forum affairs in which the rank and file members participate actively and often eloquently. With this free exchange of information and experience the meetings are invariably packed with the kind of solid, practical help that producers want.

The Concrete Industries Exposition, always a strong drawing card, is held on alternate years in conjunction with the annual convention. At the combined exposition and convention in Chicago in 1947 more than 3,000 people registered, and it is expected that this figure will be topped at the 1949 meeting. At this affair the Sixth Concrete Industries Exposition will be staged on the arena of the Public Auditorium in Cleveland from January 31 to February 3. N.C.M.A. conventions are open to non-members upon payment of a nominal registration fee.

Although the national association is primarily concerned with problems which affect the entire industry, it cooperates closely with local, state and regional groups. For example, association members in the southeastern states hold a regional meeting each year in which the national organization and its staff participate actively. This group's next meeting is scheduled for Miami Beach, Fla., Nov. 8, 9, and 10.

N.C.M.A. is supported principally by dues collected from manufacturers of concrete masonry units, classed as regular members. Dues are assessed on a sliding scale in accordance with volume of production, the current rate being 25 cents per 1,000 8- by 8- by 16-in. equivalents, with a minimum of $25 and a maximum of $500 annually. The affairs of the association are operated on a rigid budget, and, as in all well-managed organizations, a reasonable portion of income is set aside as reserve. Both its routine activities and special projects have been carried on without special assessments of any kind.

The present staff of N.C.M.A. consists of four persons with headquarters at 38 S. Dearborn St., Chicago. Policy matters and overall supervision are the responsibility of a 15 man board of directors which elects the officers of the association. Tenure on the board is limited to three years, with five new directors being elected at each annual meeting. Presidents serve for only one year. The officers and directors receive no remuneration for either their time or for traveling expenses incurred in carrying on the activities of the organization.

The full-time staff is headed by E. W. Dienhart, executive secretary. R. E. Copeland is director of engineering and Mrs. Evelyn J. Bouet is assistant secretary. George W. Katterjohn is president and Philip Paolella, Glenn C. Barnes, and Cloyd Fellabaum are vice presidents. Harold L. Spaight is secretary-treasurer. Directors are W. Chester Smith, Austin Crabbs, L. E. Schwalbe, Otto Buehner, Horace Bush, Robert Anderson, Jay C. Ehle, A. G. Streblow, Carroll Strohm, and David Warsaw. Past presidents of the organization also serve as directors.

Both geographically, and with regard to all the diverse factors which characterize the concrete masonry unit business, these individuals represent a true cross section of the industry. They believe implicitly in their product and in its future. They extend a cordial invitation to all others in the field who share that belief to join the National Concrete Masonry Association and take an active part in the important work it is doing. With the constantly widening field of application, and the growing public acceptance of its product, the industry faces problems and responsibilities that were undreamed of a dozen years ago. In solving the problems and shouldering the responsibilities, it has greater need than ever before of a strong, effective association.

Movies Sell My Concrete

(*From page* 133)

tising more than once a week.

"The sixth advantage is lack of competition. I have an arrangement with the manager of the local movie house to show no competing concrete manufacturer's advertisements. I think this is important, since the prospect's attention is necessarily placed more on the movie than on the store name that follows. It is my understanding that such arrangements are customary in theatres all over the United States. Seeing that no competing films go on is certainly important. Any concrete manufacturer who thinks about using movie advertising should be sure that he alone gets the attention of the prospect.

"The last advantage is low price. Many concrete manufacturers see movie advertising as something very expensive that only the well-heeled big operator can afford. But that is not so. It depends upon what you want to buy, of course, but the prices—including a playlet ready to use—run as low as ten dollars a week. The price I pay is determined by the coverage I buy. It naturally costs more to purchase movie time in a first-run house than it does in a third-run show. Likewise, the economic circumstances of the people who go to a movie house determine the price paid for advertising in it. But by and large, movie advertising is like newspaper, radio, outdoor or direct mail—you can buy a little or you can buy a lot, depending upon what your advertising budget allows."

How can a concrete manufacturer prepare advertising movies or have them prepared, and how can he arrange for advertising time in theatres for his selling film?

"The easiest way," says the concrete manufacturer whose experiences we've quoted above, "is to arrange with a movie advertising company. There are several of these in the United States. Every sizable town has at least one, and if not, it has a salesman who represents a large national outfit. The concrete manufacturer can usually find one by looking in the yellow classified section of his telephone book."

These movie advertising firms usually offer ready-to-run playlets that dramatize almost any kind of theme you might want to push. They have literally hundreds of playlets. It is often a good idea to choose one of these because, being ready-made and offered to many concrete manufacturers all over the country (or the state), they can be more professional, smoother jobs than if they were made to order for one company—and they cost considerably less than a custom-made job.

Stock playlets are available for selling any concrete company theme or idea.

(*Continued on page* 155)

Concrete Filler Block

• Placing of soffit block. Joints between units in alternate rows are staggered.

STANDARD masonry units as filler clock for floors in combination with cast-in-place joist and slab construction is not a new idea, but a rather old one which has been revived by progressive block producers seeking new markets and uses for their masonry products. As a natural accompaniment to the production of other concrete products, hollow concrete filler blocks offer alert producers an opportunity to tap a huge potential market—heretofore considered the exclusive domain of other competitive building materials. Despite the fact that filler block can be made on most concrete block machines, few producers have bothered to promote these units.

During the past 18 months one of the major technical activities carried on by the National Concrete Masonry Association has been the gathering and assembling of design data on concrete filler block floors. The result of this investigation has recently been published in a booklet and three supplements entitled, *Design Data on Concrete Joist-Concrete Filler Block Floors,* which is available to Association members for further distribution to architects and engineers. The information, accompanying charts and tables are abstracted in part, from the N.C. M.A. report.

Concrete filler blocks are manufactured in a range of sizes from 4-in. to 12-in. deep and, therefore, are applicable to floors having a corresponding range of depth. Concrete filler blocks in combination with cast-in-place joists and slabs are well suited to the span and load requirements usually met in residences, apartments, schools, and officies—in fact, buildings of practically all types except those involving very heavy floor loadings.

Since concrete filler block usually are made with lightweight aggregate and contain hollow spaces totaling 40 to 60 per cent of the gross volume, they effect a reduction in the dead load, as compared to a solid slab of equal load-carrying capacity.

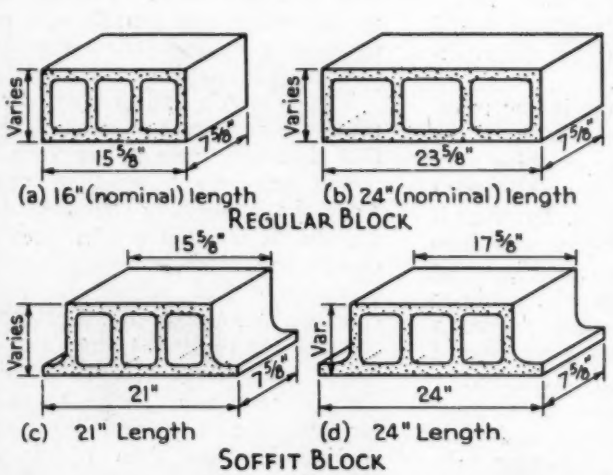
In floors and roofs where low thermal conductivity is desired there is an added advantage in concrete block fillers, especially if they are made with lightweight aggregate.

Concrete filler block can be generally divided into two types; regular and soffit (see illustration). Only the 16-in. regular block is generally available throughout the country at the present time. These units are made in nominal depths of 4, 6, 8, 10, and 12 inches. Regular units are sometimes manufactured in the 24-in. nominal length to fill wider joist spacings.

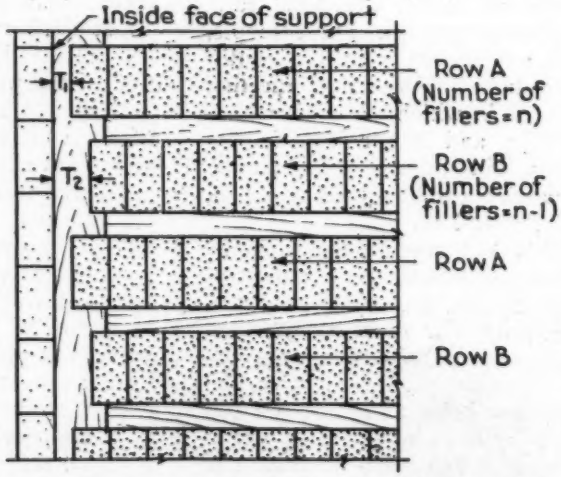
Soffit units, a name given to a type of filler blocks with flanges on each side to accommodate cast-in-place joists of predetermined design, are manufactured in either 21-in. or 24-in. nominal lengths.

Although all the drawings in this report are consistent in showing filler block having three cores of cells, it is to be noted that fillers containing more or fewer cells are equally acceptable. Regular block with con-

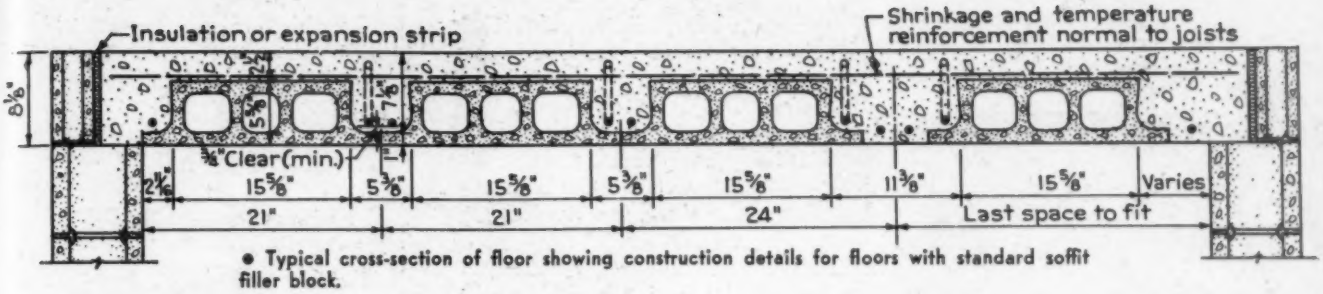
• Below, left: Types of concrete filler block.
• Right: Plan view illustrating filler block layout.



Note: Dimensions of fillers from different sources of manufacture may vary slightly from the dimensions shown.
The number of core spaces per unit may be varied



The B-rows of fillers have one less filler than the A-rows
$T_2 = T_1 + \frac{1}{2} w$; where w = width of filler
Clear span distance $= T_1 + nw + T_1 = T_2 + (n-1)w + T_2$



• Typical cross-section of floor showing construction details for floors with standard soffit filler block.

cave instead of plain ends may be used if desired. In fact, if the filler block meet minimum requirements as to compressive strength and end wall thicknesses, their design can vary considerably without affecting their proper function in the floor system.

The floor designs included in the accompanying tables and supplements are based on the use of structural-grade filler block having a compressive strength at 28 days of not less than 2,500 pounds per square in. on the net section, the end walls (portions in contact with the joist) should be at least 1 in. in thickness.

SPECIFICATIONS FOR CONCRETE FLOOR FILLER UNITS

The following specifications covering structural and non-structural grades on concrete floor filler units are suggested. Structural-grade units should be specified where the fillers are to be placed with staggered joists and their end walls included in the design calculations for shear and negative bending. The non-structural grade will be satisfactory where the fillers are not included in the design calculations.

Scope These specifications cover structural and non-structural grades of concrete floor filler units made from portland cement and suitable aggregates such as sand, gravel, crushed stone, bituminous or anthracite cinders, burned clay or shale, pumice, and blast-furnace slag.

Floor construction is a field hardly touched as yet by the concrete masonry industry. Surprisingly, every block producer can compete for this huge market without additional capital outlay. On these pages we have abstracted sections from a recent N.C.M.A. technical report on concrete filler block. We feel that this resume will be helpful to producers seeking new markets for their products.

(Note—When a surface texture, havin special acoustical properties is desired, this feature should be specified separately by the purchaser.)

Physical Requirements At the time of delivery to the site of the work structural grade units shall conform to the physical requirements prescribed in the table below. Non-structural grade units shall have sufficient strength for purposes of handling and placing.

Structural Grade Floor Filler Units Compressive Strength, min. p. s. i. (Average Net Area)

Average of 5 Units	Individual Unit
2,500	2,000

The average weight of any 10 units after storage in normal room air for 7 days shall not exceed by more than 10 percent nor more than 3 pounds, whichever is less, the manufacturers' specified weight for any form of unit.

Dimensions, Permissible Variations Minimum face and end-wall thickness shall be not less than ⅝ in. for non-structural grade units nor less than 1 in. for the structural grade.

No over-all dimension shall vary more than 3 percent over or under the specified dimension for any form of unit.

Inspection Visual All units shall be sound and free from defects that would interfere with the proper placing of the units.

Units that are intended to serve as a base for plaster shall have a sufficiently rough surface to afford good bond.

Sampling and Testing The purchaser or his authorized representative shall be accorded proper facilities to inspect and sample the units at the place of manufacture from the lots ready for delivery. At least 10 days should be allowed for completion of the tests.

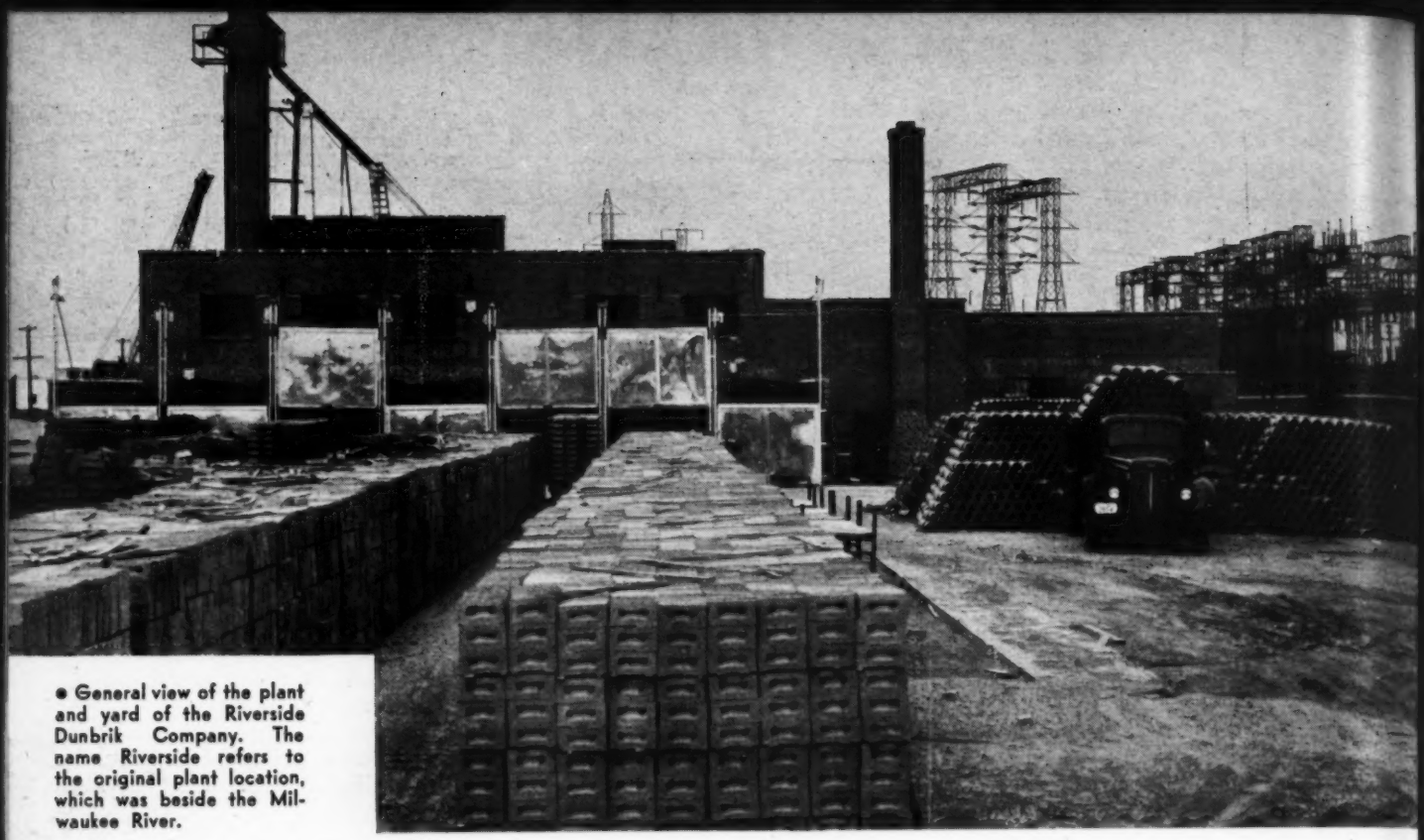
Units shall be sampled and tested in accordance with the Standard Methods of Sampling and Testing Concrete Masonry Units (A.S.T.M. Designation: C 140) of the American Society for Testing Materials, except that, at the manufacturer's option, specimens to be tested for compressive strength shall have a height (dimension parallel to the applied load) equal to three times the average thickness of the end wall, these specimens being sections sawed from whole units.

Rejection In case the shipment fails to conform to the requirements, the manufacturer may sort it, and new specimens shall be selected by the purchaser from the retained lot and tested at the expense of the manufacturer. In case the second set of specimens fails to conform to the test requirements, the entire lot shall be rejected.

ASSUMED WEIGHTS OF CONCRETE FILLER BLOCK

Regular Filler Block		Soffit Filler Block	
Nominal Dimensions; Inches (Depth) (Width) (Length)	Weight Per Unit; Lb.	Nominal Dimensions; Inches (Depth) (Width) (Length)	Weight Per Unit; Lb.
4 x 8 x 16	18	4 x 8 x 21	19
6 x 8 x 16	24	6 x 8 x 21	25
8 x 8 x 16	30	8 x 8 x 21	31
10 x 8 x 16	36	10 x 8 x 21	37
12 x 8 x 16	40	12 x 8 x 21	41
4 x 8 x 24	27	4 x 8 x 24	23
6 x 8 x 24	32	6 x 8 x 24	28
8 x 8 x 24	38	8 x 8 x 24	34
		10 x 8 x 24	40
		12 x 8 x 24	44

Depth—Vertical dimension of filler as positioned on floor.
Width—Dimension of filler measured parallel to joists.
Length—Dimension of filler measured normal to joists.
Actual dimensions usually are ⅜" or ¼" less than the nominal dimensions.



• General view of the plant and yard of the Riverside Dunbrik Company. The name Riverside refers to the original plant location, which was beside the Milwaukee River.

Designed for Better Brick

Here is a small concrete brick plant that has brought production and sales within near perfect balance by virtue of intelligent plant design and persistently good sales policies.

By EDWARD BRUNENKANT

another ON THE SPOT report

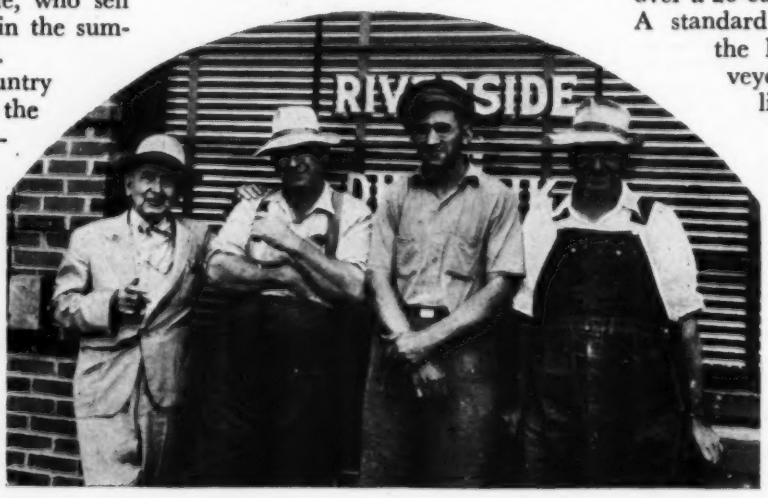
AROUND Milwaukee, almost every construction man knows Jake Poppert—if not by name, by sight. His jaunty step, despite the years, and his panatella cigars, which he passes out liberally, are familiar sights to anyone who might need or use bricks, be he an engineer, architect, owner, construction foreman, or bricklayer.

Whether or not it's Jake's salesmanship, persistence, wide circle of friends among the building trades, or a combination of all three, his efforts have been in a large measure responsible for the growing preference and use of Dunbriks in this area.

Jake Poppert is the sales representative of the Riverside Dunbrik Co., manufacturers of concrete brick and concrete drain tile, who sell more units per month (in the summer) than they produce.

In 1935, when this country was still floundering at the bottom of history's severest depression, the company (then known as the Riverside Sand & Gravel Co.) was in the sand and gravel business and desperately looking for a way to dispose profitably of its surplus pea gravel. And the production of concrete brick seemed a good solution.

So good was the solution that a few years later the company disposed of its sand and gravel operations, changed its name to Riverside Dunbrik, and settled down to the task of producing and selling Dunbriks. Although the Riverside Dunbrik Company represents a modest capital expenditure, when compared to some of our larger concrete masonry manufacturers, everything about the plant and plant operations are in balance.



• Jake Poppert, salesman; John A. Krause, president; Harry Otto, secretary-treasurer; Hugo Laabs, vice-president.

The plant was designed by John A. Krause, president of the company, to produce quality concrete brick and tile most economically. Therefore, nothing within or about the plant is makeshift. Every operation of producing Dunbrik and tile was carefully developed and allowed for in the design of the plant layout.

All aggregates, sand and pea gravel, are trucked in and unloaded over a 20-cu. yd. undertrack hopper. A standard conveyor system from the hopper, short belt conveyor to bucket elevators, lifts the aggregates to a 3-compartment 70-cu. yd. bin. This equipment was supplied by the C. S. Johnson Co.

The bucket elevator extends approximately 65-ft. above the ground in order that the angle of inclination of the feed chutes be sufficiently steep to permit the free downflow of the aggregates by gravity.

Two skip hoists spotted beneath the bin chutes charge two 16-cu. ft. Dunn tub-type mixers. Aggregates for a third skip hoist, used to charge a separate mixer in the drain tile department, are moved manually from the bin chute in a pneumatic-tired buggy.

Cement is handled in bags and added at the skip hoist with a mix ratio of about 1 to 8. The company uses air-entraining cement when it is available. Water is added at the mixer through a Badger meter.

The two Dunbrik machines are completely self-contained units and have a combined output capacity of 90 bricks per minute. The cores, which form the frogged indentations in the Dunbriks, are part of an endless belt which conveys the molded units away from the machine. Tamping and troweling are electrically controlled, as are all other operations of these machines.

As the green units, three at a time, come off the front of the machine, they are loaded by the machine operator on company-designed steel racks. The racks, which will accommodate 576 Dunbriks, are spotted on a free-swinging turntable (full 360 deg. rotation) next to the machine. This turntable swings so that the rack is positioned for easy and quick loading. Racks are moved to the kilns and empties returned with a hand-powered lift-truck. However, the maximum distance from either machine to the farthest point in any kiln is only 50 ft.

Concrete drain tile can be made in sizes from 3 to 12 in. The two machines which the company operates are of the packerhead type and were supplied by the W. E. Dunn Mfg. Co.

Curing for the entire output of the plant, both brick and tile, is handled in seven kilns—3 for tile and 4 for brick. The kiln walls are built of Dunbrik with a 2-in. air space. The roof is a 5-in. reinforced concrete slab covered with a topping of poured asphalt. Double aluminum doors which seal both ends are raised and dropped through a system of counterweights.

The curing cycle is so arranged that when steam is on in four kilns the remaining three are being stripped. When a kiln is loaded, the green bricks are given a two-hour preliminary set with live steam loosed through a 1/16-in. jet opening. An additional 2½ hours of steam soaking at 130 deg. F. completes the cycle. Optimum results demand that the bricks be yard-cured for a period of 14 days.

In addition to the plain gray-colored Dunbrik, a variety of solid colored units can be produced. At this plant the color is added at the mixer in the form of mineral oxides. Depending upon the color and the strength desired, 9 to 25 lbs. of oxide is added to the mix. Experience has indicated that a further addition of 20 lbs. of lime to the colored mix appreciably increases the strength of the finished units.

During the 1948 spring and summer months, sales have outstripped production. For the month of June, the company produced 815,000 Dunbriks against sales that month of 835,000 units.

Associated with Mr. Krause at Riverside Dunbrik are Hugo Laabs, vice-president, and Harry Otto, secretary-treasurer.

• The operator lifts three bricks at a time and places them on the homemade steel racks. The brick machine is self-contained. The cores, which form the frogged indentations in the bricks, are a part of the endless belt which carries the bricks away.

• Right: A skiphoist unloading into the 16-cu. ft. tub mixer. When it is available, the company uses air-entraining cement.
• Below: In one month the company produced 90,000 ft. of drain tile with two of these machines. Both are of packerhead design.

Wells Dunbrik Co. Sold to Brower & Cooney at Quincy

At Quincy, Ill., the sale of the Wells Dunbrik Company to Leonard Brower and Billy Cooney was recently announced by the former owners, Douglas and Howard W. Wells, who launched the business about a year ago.

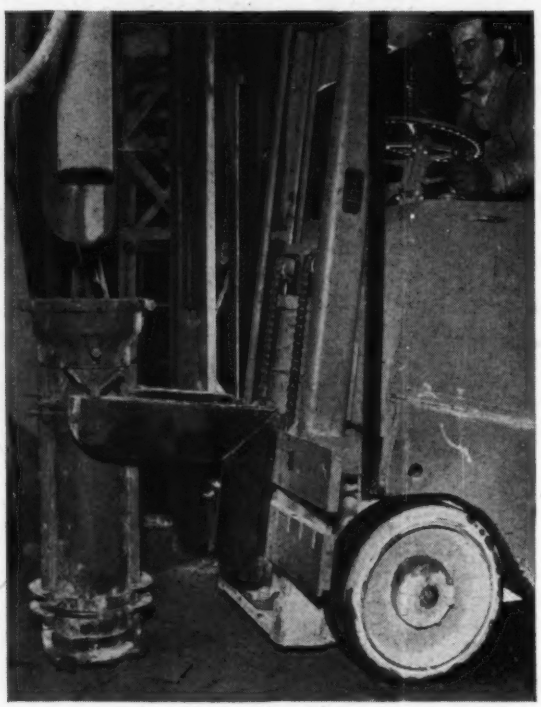
The new proprietors will operate the plant under the name of the Brower-Cooney Dunbrik Company. The present personnel will be retained, and Mr. Cooney will serve as general manager. Willard Schuttler is plant superintendent.

Power Fork Truck Solves Problem for Canadian Pipe Manufacturer

another ON THE SPOT report

AMONG the more annoying problems encountered in manufacturing concrete pipe is the removal of the units from the molding machine to the curing room. Two-wheel carts, designed to engage the trunnion projections on the pipe molds, have been used almost since the birth of the industry, and are still widely employed today. Under modern plant conditions, however, they have certain inherent faults which are causing more and more producers to turn to power-operated equipment.

A case in point is the Pressure Pipe Company of Canada, Ltd., which produces standard concrete pipe. At one time, the company used 2-wheel dollies to transport the molds from the pipe machine, which produced pipe in diameters from 6- to 24-in., to the drying kilns. With high production equipment, this practice necessitated 450 round trips per 10-hour day between the machine and the kilns, and it was virtually impossible to remove the production of which the pipe machine was capable. In addition, the job was back-breaking, and competent men refused to do the work for any length of time.



• A fork truck places the empty mold in the molding machine preparatory to casting 6-in. pipe. Note the extra wide carriage rails, which permit the forks to be extended to handle 24-in.-diameter pipe.

These difficulties were solved recently by purchasing a Baker fork-truck to replace the dollies. The truck is fitted with an extra wide fork carriage so that the forks may be moved out to handle molds up to 24-in. diameter. "V"-shaped lugs are welded to the ends of the forks to engage the trunnions on the pipe molds.

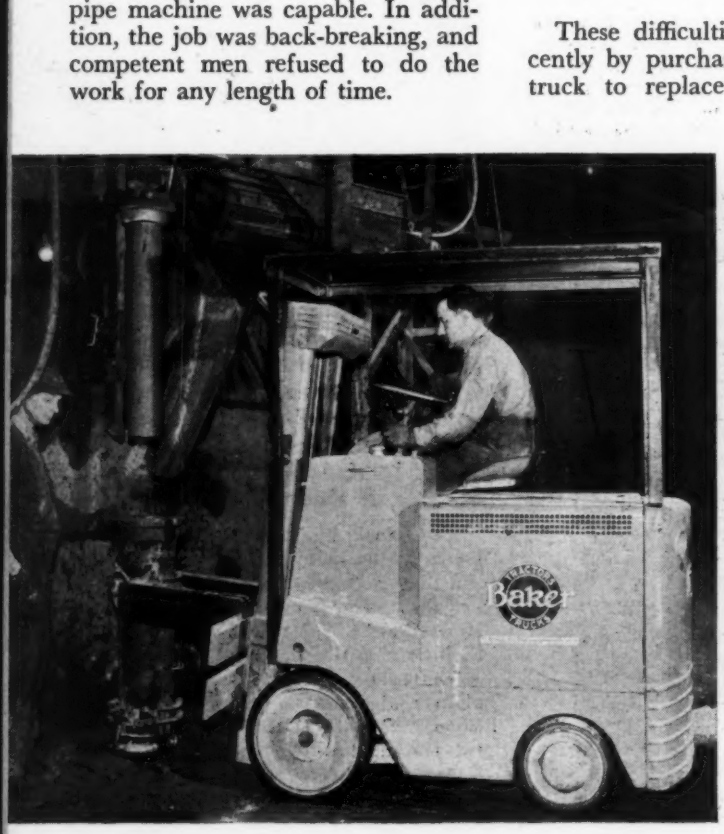
As the illustrations show, the Baker fork truck picks up the mold right at the machine and transports it to any of three kilns in the plant. The average distance is about 90 feet. The mold is set down in the kiln by tilting the fork carriage forward; it is stripped immediately and returned to the pipe machine by the fork truck.

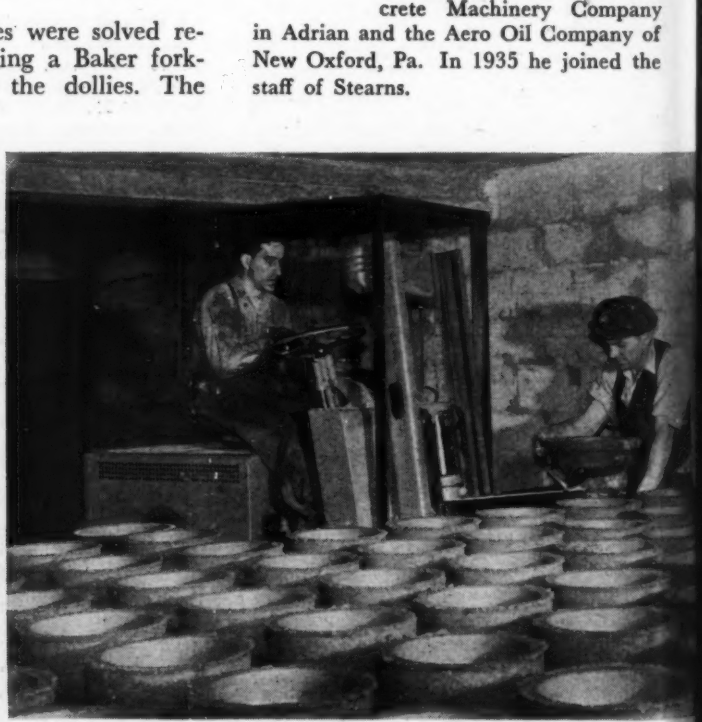
Since the purchase of the fork truck, the company is, for the first time realizing the full output of the pipe machine. Result: production and morale vastly improved.

De Lamater Leaves Stearns Mfg. Post

Word has been received of the resignation of C. S. De Lamater as director, secretary and sales manager of the Stearns Manufacturing Company of Adrian, Mich.

Mr. De Lamater was sales manager for the Anchor Concrete Machinery Company (1922 to 1928). Subsequently he was associated with the Consolidated Concrete Machinery Company in Adrian and the Aero Oil Company of New Oxford, Pa. In 1935 he joined the staff of Stearns.





• Left: The molding completed, the fork truck lifts the mold to transport it to the drying room.
• Above: Freshly cast concrete pipe being removed from the mold in the drying room, with the truck ready to return the empty mold to the machine.

Black-Brollier Opens New Building In Houston at Site of No. 3 Plant

A MODERNISTIC, air-conditioned concrete tile building, located at 3010 Dixie Drive, Houston, Tex., has just been completed to serve as the new general and sales offices of Black-Brollier, Inc., one of the South's largest manufacturers of concrete products, it was announced by George Black, company official.

The new building, measuring 40 by 120 feet, is situated on a five-acre tract which also accommodates one of Black-Brollier's three Houston manufacturing plants (No. 3). One of the building's outstanding features is the large reception and display room, which has 1200 sq. ft. of floor space. Full-vision plate glass windows were used so that company products, which are on display, can be seen easily.

Other innovations include a huge sales-and-conference room designed for the convenience of builders and contractors. An eight-foot table allows ample room for studying plans, and special telephones have been provided. Behind this room is a lounge and bar, beautifully furnished with rattan furniture, draperies, and modern prints.

A private PBX board has been installed to handle calls from the two other Black-Brollier plants. All floors are covered with Azroc tile, indirect and fluorescent lighting has been installed, and a fire-proof vault is located in the rear of the building.

• The new office building recently erected by Black-Brollier, Inc., in Houston, Tex.

All walls and partitions are constructed of 12-inch Featherlite tile units. The roof is a monolithic concrete slab formed of Featherlite aggregate, a construction feature which considerably increases insulation. The exterior of the building is finished with white cement paint and Black-Brollier Anti-Hydro waterproofing. The inside walls are plastered and painted. A large shelled parking lot, accessible from two roads, is located at the rear.

Black-Brollier has operated plants in Houston since 1936. Today approximately 225 employees are on the payroll. The firm has its own transportation department, which consists of more than 30 mixer, dump, semi-trailer, and flat bed trucks. A company maintenance department handles all automotive repairs. Rail facilities are available at all plants, and Link-Belt Speeder is used to unload raw materials.

George Black, Ernest Black, and Lee Brollier have been firm officials since the company's inception in June, 1936. At that time, operations began on a small scale at 4616 South Main in Houston. Today, with three large and modern plants in Houston, Black-Brollier serves every segment of the building industry and covers central and south Texas, particularly the Gulf Coast area.

Plant No. 1 at 803 Blodgett consists of large warehouses containing adequate stocks of all products for immediate delivery. Also at this

(*Continued on page* 149)

• Flight view of a Black-Brollier area. At the left is the No. 3 plant; in the lower right corner is the new office building.

Southern California Concrete Masonry Men Hear Katterjohn, Copeland

By HARRY F. UTLEY

another ON THE SPOT report

PRESIDENT George Katterjohn and Director of Engineering Ronald E. Copeland of the National Concrete Masonry Assn. were guests of honor at the summer membership meeting of the Concrete Masonry Manufacturers Assn. of Southern California, held on August 17 at Rodger Young Auditorium in Los Angeles.

Attendance at the meeting totaled 75. The gathering opened with a dinner, following which Messrs. Katterjohn and Copeland spoke, giving the Californians a cross-sectional picture of the nation's concrete block industry. Between World Wars I and II the industry grew faster than any other construction material, it was revealed. By 1941, concrete block production had caught up with its equivalent in clay brick and clay tile. Since that year, concrete block has far outstripped the clay products industry. In the opinion of Mr. Katterjohn, California has barely scratched the surface in the utilization of concrete blocks; he predicted an enormous growth in their use within the space of a few years on the West Coast.

• Albyn Mackintosh and Samuel Hobbs receive honorary membership certificates in the association. Left to right: President Jack Allen; N.C.M.A. President Katterjohn; Albyn Mackintosh; Samuel Hobbs; R. E. Copeland, N.C.M.A. director of engineering; and E. P. Ripley, past president of the association.

A highlight of the gathering was the presentation of honorary association membership certificates to Albyn Mackintosh, consulting engineer, and Samuel Hobbs, engineer with the Los Angeles district office of the Portland Cement Assn., for their untiring efforts on behalf of the California concrete products industry, particularly with reference to their success in obtaining favorable building code revisions.

The California group now has a total membership of 105 and is believed to be the largest organization actively engaged in concrete masonry promotion outside of the national association.

Wider acceptance is being accorded concrete block construction by California municipalities as a result of the association's cooperative test program being handled by the firm of Triplett & Barton. Under

• Tableside view of the group attending the summer membership meeting of the Concrete Masonry Manufacturers Assn. of Southern California at Rodger Young Auditorium in Los Angeles.

• This 2-bedroom concrete masonry house and carport is typical of those being built on the Security Homes project.

the plan, frequent and regular tests of members' products are made, the results being tabulated and submitted to the various city building-and-safety departments. The plants of some members are situated as far away as 300 miles from the Los Angeles laboratories and the Triplett & Barton organization plans to pick up samples for test by company-owned airplane in the near future to speed up service for these outlying members.

One association member-company, California Home Material Co. of Monrovia, is currently supplying all the units for one of the largest concrete masonry mass housing projects on record. Located in Sierra Vista, southeast of Monrovia, the project ultimately will involve the construction of 400 to 500 low-cost 2-bedroom homes. Known as Security Homes, the houses are being built in groups of 20 by H. R. Wilson & Associates of Pasadena. They are FHA financed, and sell for only $5,500 with a down payment as low as $1,000. The builder reportedly sold 74 houses from the first model, constructed on the tract within the space of a few days, and then halted any further sales until the first 60 units were actually under construction.

All units going into Security Homes are the popular "California size" (4-in. high), utilize pumice aggregates, and are produced on Besser Supervibrapac machines. It is of interest that the builder sought bids on both concrete-masonry and frame construction, choosing to use the pumice blocks primarily because the houses are costing him about $200 per unit less than if frame construction were employed!

Black-Brollier

(*From page* 147)

location is the Brooks-Taylor lime putty plant, the only one west of the Mississippi. Concrete transport mixer trucks leave from here with ready-mixed mortar.

At Plant No. 2, 2200 Buffalo Drive, concrete pipe, drain tile, and septic tanks are manufactured. The pipe is made in a large Model T McCracken machine, while tamped pipe is turned out by a Universal machine. A Champion machine is used for the manufacture of drain tile; and special forms are used for septic tanks.

3030 Dixie Drive is the location of Plant No. 3. Here concrete blocks are manufactured in a Besser Super Vibrapac machine, using Towmotors for material handling. Sand, gravel, and lightweight aggregate go into these blocks. A Hollostone block machine recently has been installed for the manufacture of special shapes to meet the needs of certain types of architecture. In addition, a Model R McCracken and a remodeled Martin pipe machine are used to turn out smaller sizes of pipe. All products are steam-pressure cured. A special device designed by Black-Brollier engineers is employed for the drying period. It has proved extremely satisfactory in pre-aging both blocks and pipe.

The Black-Brollier organization has discovered that a well-coordinated advertising effort makes a big difference in this competitive field. Several small advertisements appear at regular intervals in leading Houston newspapers. In addition, many publicity stories are used, each featuring a new home or a building in which the firm's products were used.

On the air, Black-Brollier has a 5-minute program every day, Monday through Saturday. This show, called "According to the Record," has brought considerable mail response. To reach architects, builders, contractors, real estate developers, mortgage men, and others, the company sponsors a monthly house organ named *Concrete Facts*. This attractive mailing piece has proved invaluable in promoting sales and product acceptance. Job signs, advertising the fact that the company's product is being used, and direct mail in the form of blotters and personal letters also are employed.

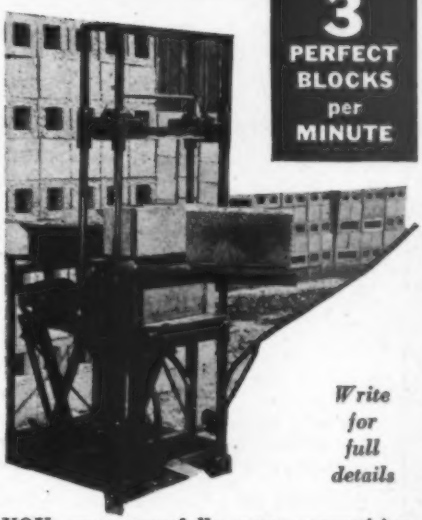
Another End-to-End Story—One Day's Pipe Equals 1 Mile

At the Houston Concrete Pipe Company's plant in Houston, Tex., huge pieces of equipment and machinery are daily turning out enough pipe to make a mile-long conduit.

Demand for this company's products is so high that shipments are frequently hauled by truck as far as 200 miles from Houston. In addition to concrete pipe, the firm also manufactures cast septic tanks, distribution boxes, precast concrete steps, concrete joists, laundry tubs and similar products. The company's machinery division constructs molds, pipe machines and accessories.

Louis Edward Fischer, 52, district sales representative for the Universal Atlas Cement Corporation, died on July 18 at his home in Braddock, Pa. He was the victim of heat prostration.

HERE'S YOUR PASSPORT
to big profits in concrete blocks



Write for full details

YOU can successfully meet competition anywhere, *on a low investment basis*, with this modern block machine.

It handles very wet aggregate, requiring less cement, and produces perfect blocks. Unit is equipped with a balanced, hand-powered packer head. Easily operated by unskilled workmen. Sturdily built for years of continuous, economical service. Price $695.00.

TENNESSEE MANUFACTURING CO.
Greenville, Tenn.

• Above: Two stages in the testing procedure of concrete roof parts at a concrete plant near Beroun, Czechoslovakia. Technicians succeeded in producing an iron-and-concrete shell consisting of only two parts, each 20 meters long and 2.5 meters wide.

ANNOUNCING

A Change of Name—

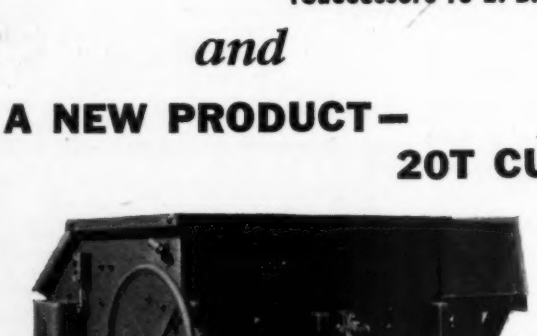
WITTEMANN MACHINERY CO.

(Successors to E. B. Kelley Co.)

and

A NEW PRODUCT—

20T CU. FT. MIXER



Overall Dimensions	
Length	10'0"
Width	3'6"
Height	4'3"

Model 20T
20 Cu. Ft. Mixer

With the announcement of our new name, WITTEMANN MACHINERY COMPANY, we are pleased to introduce our new 20 cu. ft. mixer, Model 20T, designed to meet the demand for a simpler, more efficient and longer lasting mixer.

The Model 20T mixer, built with replaceable abrasive—resistant steel bar liners, is of the paddle-blade type, with a side-door discharge, mounted on steel skids.

The model is direct motor driven by a 10 h.p., 3-phase, 60 cycle, 220 volt motor. This motor is mounted near the top (of the mixer drum), making it more accessible.

The Model 20T mixer can also be furnished with either a clutch—pulley or gasoline engine drive, whichever is preferred.

WITTEMANN MACHINERY CO.

We handle a complete line of Concrete Block Making Equipment

FARMINGDALE, N. J. Telephone: Farmingdale 5-8011-8081

Wilkerson Sells Irving Plant To Serve as Plant Consultant

C. J. Wilkerson, owner of concrete products plants in Tucson, Ariz., and Irvin, Tex., has disposed of his interest in the latter plant to J. H. Vollmer, who is operating two shifts daily to keep up with the demands in this area.

Mr. Wilkerson started the Tucson plant in 1937 and modernized it in 1944 with the latest materials-handling equipment available. He bought the Irving plant in February, 1946, and installed bins, batchers and other improvements to make it the most efficiently operated concrete products plant in that area.

During the past winter, Mr. Wilkerson built and sold a number of concrete block demonstration homes in Dallas, retaining the smallest for his own residence at 7807 Robin Road, where he plans to make his headquarters in the future.

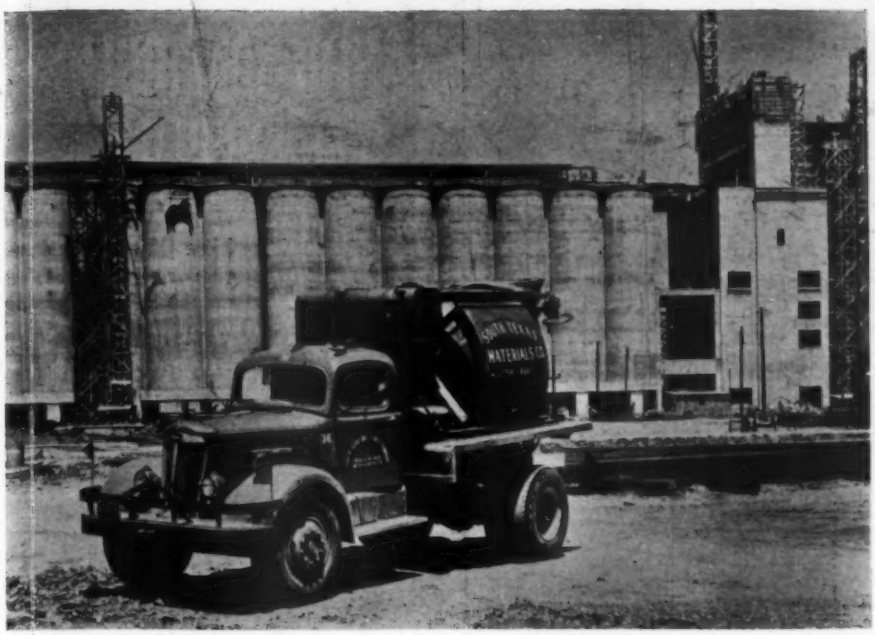
While retiring from active operations, Mr. Wilkerson plans to act in an advisory capacity to small and medium-sized concrete products plants needing assistance in solving their production and management problems but unable to engage engineering and accounting firms.

New York Concrete Pile Firm Ups Profits—Plans Expansion

The Raymond Concrete Pile Company of New York, N. Y., has reported net earnings, after taxes and preferred dividends, equal to $4.50 a common share for the first six months of 1948. This compares with $4.15 on 186,694 common shares for the corresponding period last year.

According to officials, profits have materially increased in 1948, and an even more prosperous six-month period is anticipated for the second half of the year.

During the next two years the company plans to spend $750,000 in replacing old equipment and expanding and improving shop facilities.



• Trucks with mixer bodies carried the ready-mix from The South Texas Materials Co. to the job site.

36,000 Tons of Ready Mix Supplied by Texas Firm

The indispensability of motor trucks in today's national economy and their accomplishments in the construction field are illustrated in the erection of the new $40,000,000 Blue Bonnet Plant of Corn Products, Inc., at Corpus Christi, Tex. The first section of this huge plant called for the construction of 56 large concrete silos with a grain-storage capacity of 2,000,000 bushels. The silos were built in two banks of 28 units each, a single bank requiring 9,000 tons of concrete. Altogether, the silos and foundations of the plant utilized 36,000 tons of concrete which had to be transported from a ready-mixed concrete plant 1¼ miles away. The contractor, South Texas Materials Co., used six of its ten Model WB-22 White trucks with Rex 3-cu. yd. mixer bodies. To supply the requirements, a total of 18,300 lbs. per trip was carried.

Concrete for the two banks of 28 silos each had to be poured in two continuous runs, using slip forms. This necessitated day-and-night operation of the ready-mix trucks, with the use of three shifts of drivers for each vehicle. The first continuous pour required 176 hours, the second 216. Rain and cold weather were encountered on the second pour, which delayed the setting of concrete and at times made the roads next to impassable.

The six WB-22 Whites performed on an unbroken schedule until the 18,000 tons of concrete used in the silos was poured. The accomplishment of this feat was greatly aided by the fact that no breakdown occurred throughout the period.

Variety of Masonry Units Made At Cheyenne Concern's Plant

The Powers Builders Supply Co. has started production of Vibrapac concrete masonry units in its new plant at 1003 East Lincolnway, Cheyenne, Wyo.

The new equipment includes a Besser Super Vibrapac machine, featuring undirectional vibration. This makes possible the control of density and texture with a wide range of aggregates to meet requirements for insulation against moisture, sound penetration and for acoustical control. The masonry units will be manufactured in both concrete and cinder blocks in seven different shapes.

Plant Notes

At Union City, Tenn., owners of the McAdoo Builders Supply Company have installed a new automatic concrete block machine which will produce 4,500 units in 24 hours. The firm also makes septic tanks, culvert pipe and ready-mixed concrete.

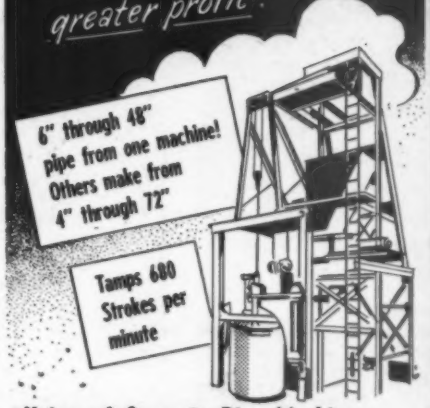
According to an announcement made by Jack Gore, manager of the Anna Block Company, Anna, Ill., the firm is now turning out pumice block, well known for its lightness, nailability, and fireproof and insulating characteristics.

The newest industry at Pittsfield, Ill., is the plant of the Pittsfield Ready Mixed Concrete Company, opened a few weeks ago under the supervision of Marshall Chiasson. In addition to ready-mix, the firm will also make concrete masonry block and steel window frames.

John C. Dooley and Jack W. Dowd, who have been engaged in the concrete business at Seaside, Ore., have opened the Tri City Redy Mix plant near Myrtle Creek, Ore. They plan improvements in the future which will cut production time and prices as well.

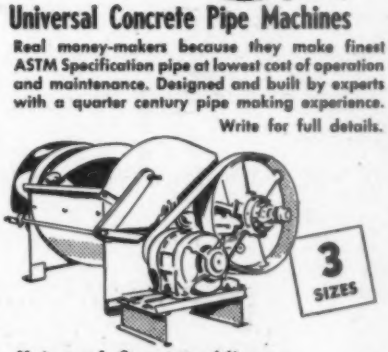
Universal

Pipe-Making Machines are real profit-makers because they're built by pipe-makers! ... They produce more pipe in fewer man-hours ... at greater profit!



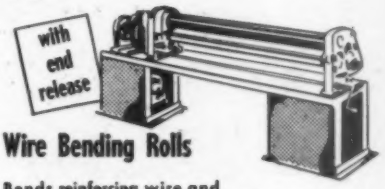
Universal Concrete Pipe Machines

Real money-makers because they make finest ASTM Specification pipe at lowest cost of operation and maintenance. Designed and built by experts with a quarter century pipe making experience. Write for full details.



Universal Concrete Mixers

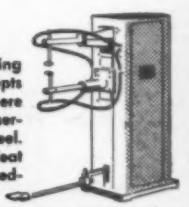
Work horses for manufacturers of concrete products. Simple, dependable over years of continuous operation. Save on first cost and upkeep. Capacities: 28, 42 and 50 cu. ft. Send for information.



Wire Bending Rolls

Bends reinforcing wire and steel plate to any radius, accurately, quickly. Quick, easy removal of completed cages. Extra heavy frame and oversize bearings, with covered gears and overload safety feature.

Wire Mesh Welder

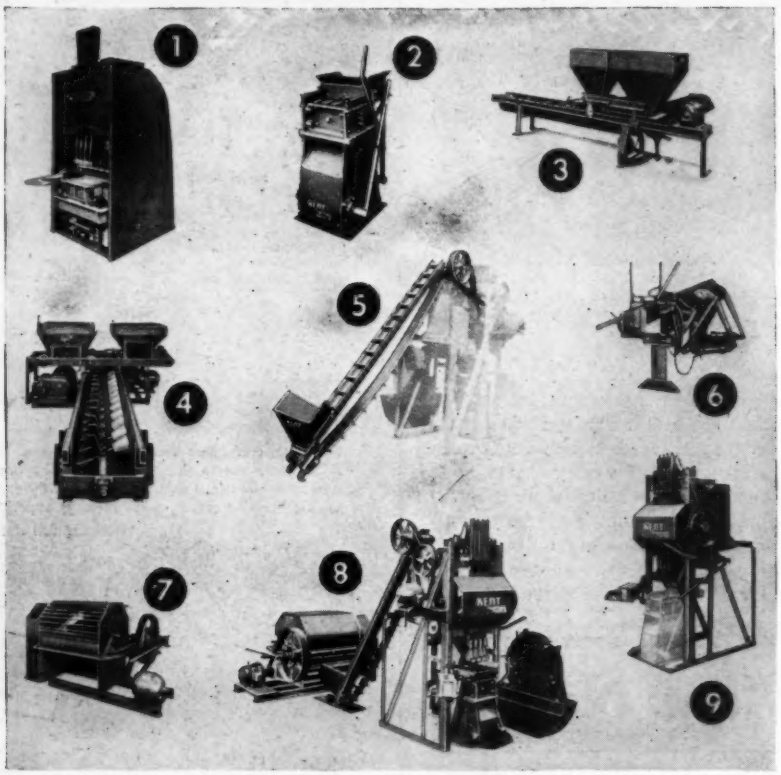


Specially designed for welding reinforcing wire (but adapts for many other uses). Best there is for steady heavy-duty service. Fully enclosed in steel. Water-cooled electrodes. Heat control switch. Swivel foot pedal leaves both hands free.

"It's better to own Universal Equipment... ...than to compete against it!"

Write Today for details, prices
UNIVERSAL CONCRETE MACHINERY CO.
297 South High Street Columbus, Ohio

STANDARDIZE ON
KENT *Coordinated*
MACHINERY



1 KENT Vibra-TAMP BLOCK MAKER
2 KENT STRIPPER
3 KENT Continuous MIXER
4 KENT Stediflo MIXER
5 KENT Concrete ELEVATOR
6 KENT LINTELator
7 KENT Batch MIXERS
8 Complete KENT Packaged BLOCK PLANTS
9 KENT TAMPER

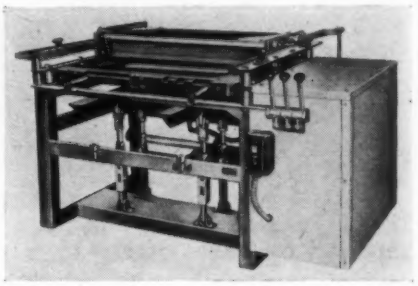
Write for Illustrated Literature on Any of These Machines

The KENT MACHINE COMPANY
Manufacturers of CONCRETE PRODUCTS MACHINERY *Since 1925*
CUYAHOGA FALLS, OHIO, U.S.A.

NEW MACHINERY and SUPPLIES

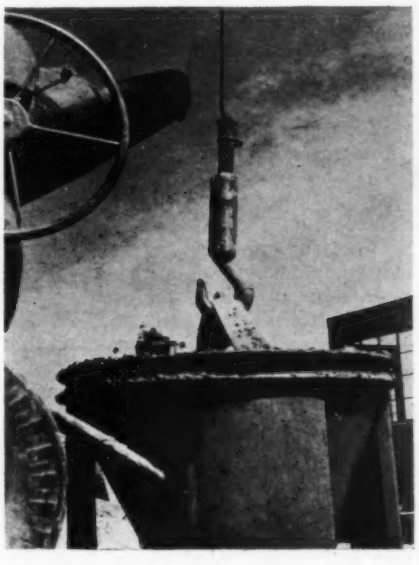
● Stave Machine

The Monarch hydraulically operated stave machine, manufactured by the New Monarch Machine and Stamping Company of Des Moines, Ia., makes a concrete stave 30 in. long, 10 in. wide and 2½ in. thick. These staves are con-



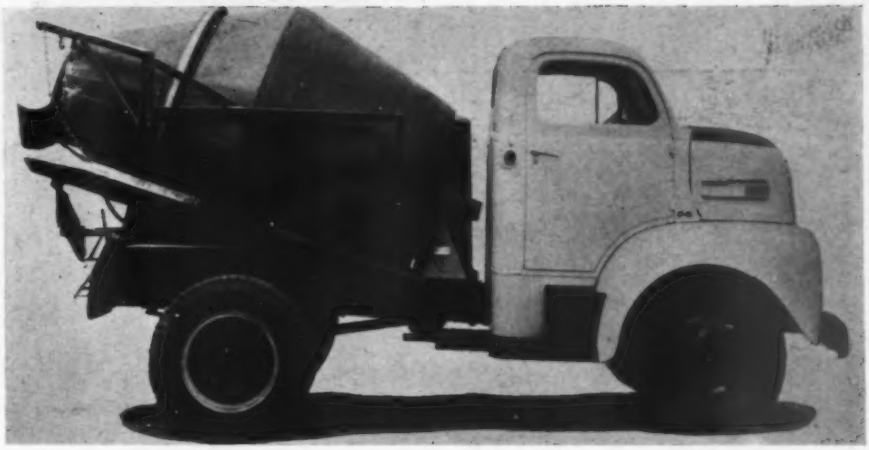
cave and convex and permit the building of variously sized silos, from 10 feet to 30 feet in diameter.

The use of a hydraulic stave machine saves the work of one man and removes the manual labor from the job of making staves. As the hopper is moved forward and back the molds are opened and closed and the pallets raised and lowered hydraulically, thus eliminating hard labor and making possible an output of 1,200 staves per day.



Twist and line unlaying of wire hoisting lines are eliminated through use of Miller Anular Ball Bearing Swivels, designed and developed by General Machine & Welding Works, Pomona, Calif. Here a heavy concrete bucket is held in position by the Miller Whip Line Special. This model of swivel weighs only 32 lbs., yet is heavy enough to return a whip line to the ground when using a long boom. Even under the maximum load of 77,000 pounds, the swivel can be turned by merely grasping it with the thumb and forefinger.

• Right: A 3-cu. yd. lightweight transit mixer is offered by the Willard Concrete Machinery Co., Ltd., Lynwood, Calif. The drum assembly weighs only 2,930 lbs. (Most weigh 1,000 lbs. more.) Its greater capacity was achieved by increasing the diameter of the drum. This mixer is made of tough steel, and it can be operated from the rear or the cab.

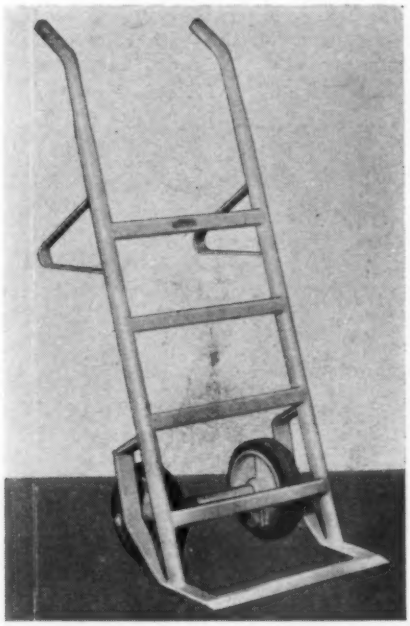


• Precision-Balanced Truck

Users of two-wheeled hand trucks appreciate the value of the new Lewis Shepard patented "FloorMaster Steeler" warehouse type two-wheel hand truck (Western pattern).

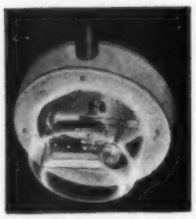
Here is a precision-balanced truck, with all-steel welded unit frame of tubular airplane construction. It is balanced for greater ease in breaking over the load, and for faster maneuvering.

Channel cross bars, straight or curved, can be furnished as desired. Two handle



lengths are also available. Swaged steel grips integral with side frames eliminate the splintering and cracking which is characteristic of wooden handles. A choice of semi-steel, rubber-tired, or Celoron wheels is offered; roller bearings are standard. Lewis Shephard Products, Inc., 275 Walnut Street, Watertown 72, Mass.

• Bulk Indicator



The Bin-Dicator Company, Detroit 15, Mich., announces a new, smaller "Bin-Dicator," called the "Bantam." This indicator is designed for use on very small hoppers, spouts, chutes, and conveyors, and other applications where it is not possible to use the standard Bin-Dicator because of its size. (The Bantam is only 5¾ in. overall diameter.)

Both standard and Bantam Bin-Dicators are diaphragm-operated switches in sealed housings which mount on the outside of bins, hoppers, screw con-

SYNTRON

"Vibra-Flow"

VIBRATORY FEEDERS

With Adjustable Control of Material Flow

INCREASE MATERIAL HANDLING EFFICIENCY

—by permitting the operator to adjust the material flow to suit the capacity of crushers, grinders, screens, pulverizers, etc.

—by handling a variety of materials ranging from light, fine powders to coarse, heavy chunks—hot or cold, dry or damp.

No moving mechanical parts such as gears, pulleys, eccentrics, belts or chains —all movement is confined to the vibrating trough.

Available in a variety of trough styles—flat pan, tubular, grizzly and spreader, and with capacities of from a few pounds to 500 tons per hour.

Write for illustrated folder.

SYNTRON CO.

385 Carson **Homer City, Pa.**

IN CHICAGO
IT'S DUMPCRETE CONCRETE* AGAIN!

DUMPCRETES HAUL 14 MILES IN CHICAGO TRAFFIC

The Imperial Ready Mix Company's 14 Dumpcretes are busy hauling top-quality air-entrained concrete in and around Chicago.

The above photo shows a Dumpcrete pouring foundation piles at the new A. B. Dick Co. plant after a 14-mile, 50-minute haul.

By controlling the mix at the central plant, every load is uniform. Each has just the right amount of air to maintain top-to-bottom uniformity. No additional air is beaten into this "controlled mix" by the non-agitating Dumpcretes during the haul . . . so the delivered concrete is all according to specification.

The Dumpcretes save money too. They cost less to buy and less to run.

Every concrete man wants to deliver better concrete at lower cost. Write for complete information today.

The Dumpcrete Body

Lightweight, watertight, loads fast, dumps fast or slow, places anywhere, costs less to buy and run. Ideal for hauling aggregate, coal and earth.

• • •

*** Dumpcrete Concrete**

Is central-mix air-entrained concrete hauled and placed with the speedy, low-cost Dumpcrete. Provides top-quality, plastic, workable and non-segregating concrete, saving up to $1.00 per yard.

DUMPCRETE DIVISION
MAXON CONSTRUCTION CO., INC.
504 Talbott Bldg., Dayton 2, Ohio

SPEED PRODUCTION — DECREASE INJURIES

Designed by specialists for safety, these thumb-type hand pads offer maximum protection and cool comfort at minimum cost. Heavy genuine horse-hide. Workers like them.

Sample pair — $1.00 — Dozen pairs — $11.40.

ORDER TODAY DIRECT FROM

A DEPENDABLE GUIDE TO SAFETY
GENERAL SCIENTIFIC EQUIPMENT COMPANY
TESTED INDUSTRIAL SAFETY PRODUCTS
2735 W Huntington St., Philadelphia 32, Pa.

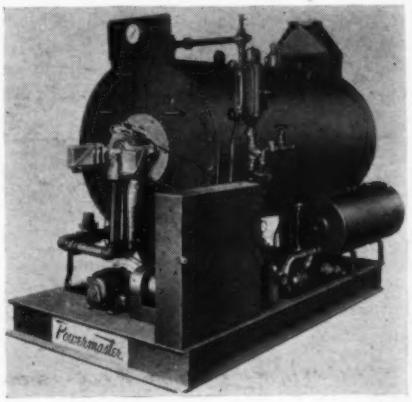
Gloves • Respirators • Goggles • Shields • Aprons • Helmets

veyors, etc., and signal changes in material levels. They will automatically start and stop filling and emptying equipment as the level of material reaches designated limits. (Bin-Dicators are used successfully on bulk materials weighing 2 to 350 pounds per cubic foot. A special arrangement of the micro switch is provided in units to operate on light materials.)

Bin-Dicators are used extensively to stop machinery when feed chutes or elevator boots become clogged with material. Special models are aviaiable for hazardous locations, and for internal mounting inside thick-walled or multiple-compartment bins. The Bin-Dicator Company, 14615 East Jefferson Ave., Detroit 15, Mich.

● Steam-Generating Unit

A new steam-generating unit with a 3-way fuel burner now makes it possible for industries requiring process steam to use heavy oil, light oil, or gas in the production of the steam. Manufactured by Orr & Sembower, Inc., Reading, Pa.,



the new unit reportedly requires only 10 minutes or less for fuel changeover and comes to full steam pressure within 18 minutes. (Usually a fuel switch from light oil to heavy oil is an operation requiring several hours.)

It is believed that the new packaged steam-generator will be especially efficient and economical in sections of the country where interruptible or "off-peak" gas service rates are in effect, and in areas experiencing an oil shortage.

The new "powermaster" ranges from 15 to 200 hp. and is fully automatic. It is said to burn heavy fuel with the same complete clean combustion with which it burns light oil and gas. Fully automatic operation of heavy fuel combustion is another feature of the unit.

Other advantages cited are modulated control of flame-volume to maintain constant steam pressure; new simplified design; free-swinging rear cover, making tubes quickly accessible for cleaning; a new air-atomizing burner; a condensate return system mounted on the base, reducing installation space; and safety features for flame failure.

A $60,000 business enterprise has been launched at St. Helena, Calif., by the Hammond Lumber Company, which has added a ready-mixed concrete plant to its activities.

Movies Sell My Concrete

(*From page* 141)

The same movie advertising company that sells you the playlet and trailer, books the film into the theatres. You choose the houses you want to sell through, and you pay a blanket price that is fixed on the basis of the coverage you buy—the number and quality of theatres in which your film is booked.

If you prefer to use a tailor-made film, these same movie firms can handle the job for you, furnishing technical help, production facilities, actors and actresses, script writers and the works. They'll book it into the theatres you choose; but the price is considerably higher than for one of the ready-made playlets.

Sometimes concrete manufacturers have had advertising movies made by local film companies. These are booked at the local movie houses by personal arrangements with the managers. Most concrete manufacturers, however, have found it simpler, cheaper and more practicable to use the facilities of the regular movie advertising services.

What should the concrete manufacturer look for when picking out playlets to use in his local movie houses? Here is the advice tendered by the sales promotion manager of a motion picture advertising service:

"There are three important things an advertising movie should have in order to do a smash selling job," he states. "These are *illustration, explanation,* and *demonstration.*

"First, it is necessary to illustrate completely the *idea* you want to get across. Sit down and think what you want the movie patron to remember after he has seen your playlet. Then make sure that the playlet you choose gets across this idea by graphic illustration.

"Next, be sure that all of the idea is presented. Look at the playlet and listen to the sound track. Does the selling spiel *explain* the idea fully and completely?

"Finally, to implant the idea firmly in the movie-goer's consciousness, see that the playlet *demonstrates* it. By demonstration, I mean that the basic advantage the customer will reap by doing what you want him to do should be put across in terms of his own interest, and the happy state he'll achieve should be demonstrated on the screen. With these three conditions fulfilled, you will have a bang-up movie for selling your concrete company."

ROBINSON

BIG SAVINGS POSSIBLE

Air-Activated

in Handling Bulk Cement

CONVEYOR

Is your cement storage bin 100 feet or more from the siding? Are there any obstructions between storage and siding regardless of distance to make mechanical handling impractical?

Look into the merits of the Robinson Air-Activated Conveyor. With it, you can get shipments in hopper bottom cars; unload each car in two hours or so; and operate season after season without heavy maintenance. Pipes do not clog because the cement does not encrust. There are no continuously moving parts, screw feeds, bearings, etc., that so frequently cause shutdowns and maintenance.

If you wish to save in costs for handling your bulk cement, investigate the Robinson System. Write to us.

ROBINSON Air-Activated CONVEYOR SYSTEMS

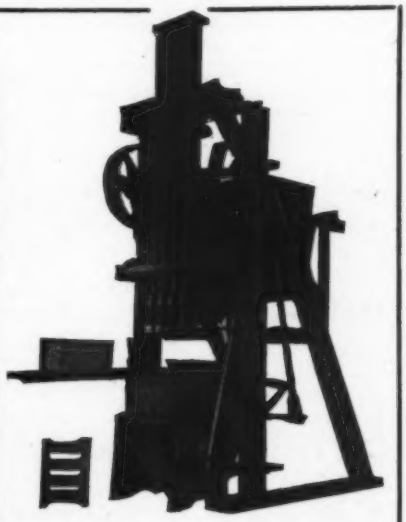
Division of MORSE BOULGER DESTRUCTOR CO.

Representatives in Principal Cities

211-G EAST 42nd STREET • NEW YORK 17, N. Y.

Represented in England by Blaw-Knox, Ltd., London

Represented in the French Union and Benelux by Cie Francaise Blaw-Knox, Paris



An All-Purpose Machine

The Junior Stripper will turn out more blocks per man than any other hand-operated machine on the market . . . 900 per hour being easily maintained! Nor has quality of output been sacrificed for the sake of speed. Units are uniformly dense, true to shape, of uniform texture.

Stearns Clipper Stripper Machines; Stearns Jolterete Machines; Stearns Mixers; Cast iron and press steel pallets. Straublox oscillating attachments, etc. Repair parts for: Anchor, Stearns, Blystone Mixers and many others.

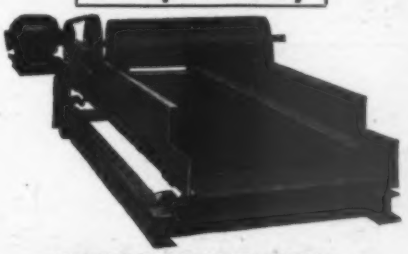
ANCHOR CONCRETE MACHINERY CO.
G. M. Frisl, Manager Columbus, Ohio

CINDER CRUSHERS FOR BLOCK MAKERS

10 to 20 ton per hour capacity $474

25 to 50 ton per hour capacity $1074

Prompt Delivery



VIBRATING SCREENS

For almost any type of screening operation, wet or dry. Makes your product more uniform and of higher quality.

BONDED SCALE AND MACHINE CO.

129 Bellview Avenue
Columbus 7, Ohio

Manufacturers of Scales, Crushers, Conveyors and Vibrating Screens

CONCRETE MANUFACTURER USED EQUIPMENT SECTION

FOR SALE

COMPLETE CENTRAL-MIX CONCRETE PLANT IMMEDIATELY AVAILABLE

1—2 C. Y. 56S Smith tilting mixer with 40 H.P. 220/440 V. 3 ph 60 cy motor. controls, etc.
1—120 ton, four compartment Johnson aggregate bin.
1—3 C. Y. Johnson concentric aggregate and cement batcher, four beams on aggregate scale, manual weighing, automatic on the cement with screw feed to cement batcher.
1—Butler water batcher, automatic or manual.
1—350 barrel Johnson cement bin, screw feed to cement batcher with 3 H.P. gear head motor, controls, etc.
1—10″ under track cement screw, capacity 80 bbl. per hour.
1—Cement bucket elevator with distributor head, etc.
1—Bucket elevator, approximately 50′ c-c, 9 x 16 buckets mounted on 6 ply 18″ wide belt.
2—Bucket elevators, approximately 50′ c-c, 7 x 12 buckets mounted on 6 ply 12″ belt.
1—New 6 ply 12″ belt for bucket elevators, never used.
1—Telsmith 16 x 30 plate feeder.
All equipment is motor driven and motors and controls are included with the equipment.
Plant can be used as central-mix plant or transit-mix.
$17,000.00 f.o.b. cars at our plant.
Phone 3-9424

KUERT CONCRETE, Inc.
3113 Lincoln Way West, South Bend, Ind.

FOR SALE

A going and growing concrete and cinder block plant, as a complete unit only, equipped with curing rooms. All equipment in perfect order and modern in every way. Location has adequate space for operation and expansion. Now doing a substantial and increasing volume, more than sufficient to indicate greater possibilities for the future.

Box No. C 52
c/o PIT AND QUARRY PUBLICATIONS
538 So. Clark St. Chicago 5, Illinois

1—K-3 Besser Tamper bought new 1941, automatic pallet feeder, offbearing air hoist, takes off three blocks at a time, attachments to make 3″, 4″, 8″, 8″ headers, 12″ blocks modular and regular sizes, 5,000 12¼x18¼ steel pallets, 90 steel racks, mixer and Crescent hi-lift electric truck included. Ideal block machine, with automatic feed mixer and pallets, 1 Crescent brick machine, automatic feeder, mixer and pallets.

CAMBRIDGE BUILDERS SUPPLY CO.
71 Homer Ave., Cambridge, Mass.
Kirkland 7-8444

FOR SALE CHEAP

1—4 yard Maxon Dumpcrete used 2½ months on job site. Excellent condition.

ERIE BUILDERS SUPPLY COMPANY
1302 Myrtle Street Erie, Pennsylvania

FOR SALE

Kent Tamper, Stripper, Feeder, Conveyor, 12 cubic ft. Mixer and 1000 8x8x16 pallets. Equipment in excellent condition. Used approximately six months. Price $1,500.00.

BUECHEL COAL & SUPPLY COMPANY
Buechel, Kentucky

SPACE HEATERS

War Surplus Bargain

New — Ready To Use!

40,000 BTU capacity

—Burning gasoline, kerosene or diesel fuel.
—Electric blower—12 V. DC or 110 V. AC using small transformer.

Portable, Quick, Clean Heat

Ideal for curing room, concrete plants, work under construction, emergency heat, or auxiliary heaters.

$95.00 each

Clapp, Riley and Hall Co.
14 No. Clinton St.,
Chicago 7, Illinois

FOR SALE

One reconditioned Stearns Power Stripper fully equipped to make 7¾ x 7¾ x 15¾ 50% a.s. plain stripper blocks, with 1,700 8″ cast iron pallets, complete.

STEARNS-OAKES SALES CO.
P. O. Box 36 Adrian, Michigan

FOR SALE

1—Appley Vibrator Block Machine with all attachments, 4″, 8″ & 12″ cores	$ 850.00
660—Pallets, aluminum, for above....	325.00
Machine and pallets together....	1,100.00
1—Hopper, holds 2 bag mix for above machine	60.00
1—Batch Mixer complete with motor, belts, etc., same as new.....	450.00
1—14′ belt conveyor with new G.E. motor, needs new belt.....	125.00

Above equipment complete ready to run, used very little, almost new condition. Will sell as compete unit for.....$1700.00

HERMAN J. BOWE
2513 Woodland Avenue, Ashland, Kentucky

FOR SALE

1—Model A Stearns Clipper Stripper Block machine complete with motors, attachments, pallets, lift trucks and new repair parts. Price right $4,000.

BREWTON ENGINEERING COMPANY
P. O. Box 43 Dothan, Alabama

FOR SALE

Complete Ready Mixed Concrete Plant in Indiana city of 15,000 population. Will sell as operating unit, or f.o.b. cars.

Box No. C 53
c/o PIT AND QUARRY PUBLICATIONS
538 So. Clark St. Chicago 5, Illinois

FOR SALE

Butler Carscoop, Model G A 7-15, gas engine, 10 cu. ft. bucket, pneumatic drive wheel tires, heavy duty transmission, and extra heavy duty differential. In excellent condition. Has had very little use.

RUBY & COMPANY
Madisonville Kentucky

HELP WANTED

Long established concrete products plant wants Superintendent of production. Give full details of experience and state salary desired. Confidential.

Box No. C 50, c/o Pit & Quarry Publications
538 So. Clark Street Chicago 5, Illinois

STEARNS LATE 1946 JOLTCRETE NO. 9 IN PERFECT CONDITION WITH AUTOMATIC CARRIAGE OFFBEARER, AND STEARNS POWER HOIST, STEARNS 42 CU. FT. MIXER, AND STEARNS 42 CU. FT. SKIP LOADER. BEING REPLACED WITH BESSER SUPER VIBRAPAC.

CHASE CONCRETE MACHINERY CO.
15 Linwood Ave. Ph. Lincoln 0918 Buffalo 2, N. Y.

FOR SALE

Graveley two unit Vibrator, Hopper, Conveyor, Mixer and 1400 8x8x16 pallets. Attachments for corner, sash, half and 4 in. blocks. 30 forty block capacity wood racks. One hydraulic lift truck with rubber wheels. Price $2,000.00.

BUECHEL COAL & SUPPLY COMPANY
Buechel, Kentucky

FOR SALE

Besser Block Machine — Semi-Automatic, in A-1 working condition. Machine improved by easy hydraulic operation. Makes blocks from 4″ to 12″. All attachments and 3000 pallets included. Machine in operation, inspection invited. Price Reasonable. Selling out because of other business interests.

PINE HILL CINDER BLOCK CO.
R.F.D. No. 1 Johnson City, N. Y.

FOR SALE

One of the most modern concrete pipe-transit mix-masonry manufacturing plants on the Pacific slope. If interested write:

Box No. B57, c/o Pit & Quarry Publications
538 So. Clark St. Chicago 5, Ill.

CEMENT COLORS — PROMPT SHIPMENTS

Write for samples and prices of "LANSCO" CEMENT COLORS in bright shades of RED, YELLOW, GREEN, BLUE, BLACK, BROWN. Manufactured by

LANDERS-SEGAL COLOR CO.
76 Delevan Street, Brooklyn 31, N. Y.

FOR SALE

1—Multiplex Super Tamper—6 mos. old. 8″ and 10″ mold boxes and attachments. Producing 2000 8″ blocks daily. For information write

GRANDVIEW GRAVEL BLOCK COMPANY
1705 Hamburg Street, Schenectady 4, N. Y.

FOR SALE

Flam Concrete Block Machine. Practically new No. 3 "FLAM" machine, Double press, electric off-bearer, four molds, one unused, hopper, some pallets and clips. Price $1350.00.

WESTERN PUMISTONE PRODUCTS CO.
P. O. Box 349, San Carlos, California

FOR SALE

1 Jackson & Church 12 pocket brick press. Rated at 28,000 brick per day.

75 metal skids, Width 3′ 11″, length 5′ 11″, and height 14″. Make us an offer.

DELHI DUNBRIK CO., INC.
Box 445, Delhi Pike Cincinnati 5, Ohio

PRICED TO SELL

1—Graveley Vibrating Block Machine with approximately 3000 aluminum pallets..$500.00
1—Ransom 2 cu. yd. transit mixer....$600.00

WATERBURY READY MIXED CONCRETE CO.
94 Benedict Street Waterbury 89, Connecticut